BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
INDEX SHEETS

INDEX OF PLANS

Container Vessel

For

Sea-Land Service, Inc.

Bethlehem-Sparrows Point Hulls 4639-4640

MA Hulls 253 & 254

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H-96	H-4639-129-04-11	7	House On "A" Dk. Aft.
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No.	Builder's Plan No.	Alt.	Title
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No.	Builder's Plan No.	Alt.	Title
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H-127	H-4639-129-10-4	1	Anchor Windlass Fdn. Above & Below Deck
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H-129	H-4639-129-10-7	3	Fdn. for Store Cranes on "B" Deck Aft.
H-130	H-4639-129-10-8	5	Fdn. for Hose Handling Davit Crane on "B" Dk. & Det. of Hose Supports on Upper Deck
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H-132	H-4639-129-10-9	5	Fdn. Steward's Stores Crane "B" Dk. Fwd.
H-133	H-4640-129-10-9	1	Fdn. Steward's Stores Crane "B" Dk. Fwd.
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H-138	H-4639-129-11-5	2	Fdn. for Two Main Condensate Pumps
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H-140	H-4639-129-11-7	2	Fdn. for Two Main Feed Pumps
H-141	H-4639-129-11-8	2	Fdn. Main Lube Oil Pumps (2)
H-142	H-4639-129-11-9	2	Fdn. Lube Oil Transfer Pump & Strainer
H-143	H-4639-129-11-10	1	Fdn. L. O. Purifier & L. O. Purifier Heater
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H-149	H-4639-129-11-16	3	Fdn. Fuel Oil Transfer Pump & Strainer Inbd.
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H-178	H-4639-129-12-11	1	Fdn. Oil & Water Separating Tank
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H-180	H-4639-129-12-13	2	Fdn. Boiler Compound Tank
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H-183	H-4639-129-12-16	2	Fdn. for Sewage Treatment Plant
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H-190	H-4639-129-12-23	1	Fdn. Emergency Feed & Transfer Pump
H-191	H-4639-129-12-26	5	Fdns. for CO_2 Bottle Stowages, Smoke Detecting Cabinet & Twin Suction Blowers in Fwd. CO_2 Room

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H-193	H-4639-129-12-28	3	Fdn. (2) 18 Tons Ship Stores Refrigeration Plant
H-194	H-4639-129-12-29	4	Fdn. 55 Tons Air Conditioning Refrigeration Plant
H-195	H-4639-129-12-30	2	Fdn. For "Universal" Machine
H-196	H-4639-129-12-32	1	Fdn. For Grinder
H-197	H-4639-129-12-33	1	Fdn. For Chemical Feed Treatment Pump & Tank
H-198	H-4639-129-12-34	1	Fdn. For Contaminated Steam Evaporator Feed Pumps
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H-200	H-4639-129-12-37	2	Fdn. For Welding Machine
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H-202	H-4639-129-12-39	1	Fdn. Refrigerated Air Cooler
H-203	H-4639-129-12-40	1	Fdn. Fpr Grease Intercepter
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H-207	H-4639-129-13-4	-	Fdn. For Tank For Priming System
H-208	H-4639-129-13-5	1	Fdn. For Accommodation Ladder Boom
H-209	H-4639-129-13-6	3	Fdn. Deaerating Feed Water Heater
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H-211	H-4639-129-13-13	-	Fdn. Potable Hot Water Heater (Fwd.)
H-212	H-4639-129-13-15	2	Fdn. Fire Pump Forward

No.	Builder's Plan No.	Alt.	Title
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H-215	H-4639-129-13-23	1	Fdn. Vacuum Priming Pump
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H-220	H-4639-129-15-1	1	List Of Aux. Mach'y. Fdns. Electrical
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H-222	H-4639-129-15-3	2	Fdn. Emergency Switchboard
H-223	H-4639-129-15-4	1	Fdn. For 50 KVA Norm. Ltg. Transformers
H-224	H-4639-129-15-5	1	Fdn. For Galley Transformers
H-225	H-4639-129-15-6	2	Fdns. For Electronics Cabinets, Engine Rm. Console Boiler Treatment Units, 500 T. Blower, Cable Trough & Coaming Bars For Dk. Covering in Control Rm.
H-226	H-4639-129-15-7	1	Fdn. For Aux. & Main Radar Transmitter/Receiver Units
H-227	H-4639-129-15-8	1	Fdn. Forced Draft Fan Controllers
H-228	H-4639-129-15-9	1	Fdns. For Misc. Controllers
H-229	H-4639-129-15-10	1	Fdn. For Automatic Telephone Switchboard
H-230	H-4639-129-15-11	0	Fdn. For Accommodation Ladder Hoist Motor Cable Reel
H-231	H-4639-129-15-13	1	Fdn. Anchor Windlass Master Switch
H-232	H-4639-129-15-14	3	Fdn. Mooring Winch Master Switch's Fwd. & Aft.
H-233	H-4639-129-15-19	1	Fdn. For Capstan Controller Resistor Bank & Capstan Master Switch

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H-235	H-4639-129-15-21	2	Fdn. Gyro Bearing Repeaters
H-236	H-4639-129-15-22	3	Fdn. Steering Console
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H-238	H-4639-129-15-25	0	Fdn. For Main & Aux. Radar Displays
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H-244	H-4639-129-15-37	2	Fdn. For 75 K.V.A. Transformers For Reefer Container
H-245	H-4639-129-15-38	1	Fdn. For Norm. & Emer. Ltg. Transformers Fwd.
H-246	H-4639-129-15-39	2	Fdn. For 37.5 K.V.A. Transformers For Reefer Container
H-247	H-4639-129-15-40	1	Fdn. For Mooring Winch Control Panel Fwd.
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H-249	H-4639-129-15-42	1	Fdn. For Mooring Winch Grid Bank Fwd.
H-250	H-4639-129-15-43	1	Fdn. For Mooring Winch Control Panel Aft.
H-251	H-4639-129-15-44	3	Fdn. For Mooring Winch M/G Set Aft. - Std. Only
H-252	H-4639-129-15-45	2	Fdn. For Mooring Winch Grid Bank Aft.
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E-592	202-10-01	4	C. R. - Cable Routing Listing

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M-553	111-20-48	-	Vents, Overflow & Soundings - Aft. Machy. Space
M-554	111-20-49	2	Vents, Overflows, & Soundings - Fwd. (Frs. 148-227)
M-555	111-20-49A	2	Vents, Overflows, & Soundings - (Frs. 64-148)
M-556	111-20-50	5	Vents, Overflows, & Soundings - (Fwd. Fr. 226)
M-557	111-20-55	2	Low Pressure Distilling Plant Piping
M-558	111-20-56	3	Bilge & Clean Ballast System Outside Aft. Machy. Space (Frs. 64 to 227)
M-559	111-20-57	6	Bilge & Clean Ballast System Outside Aft. Machy. Space (Fwd. Frs. 227)
M-560	111-20-58	3	Remote Tank Level Indicating System
M-561	111-20-60	2	Ship's Draft Indicating System
M-562	111-20-61	2	Scavenging Air System
M-563	4639-111-22-01	-	Heat Balance & Steam Flow Diagram - Normal Power 28,800 SHP
M-564	4639-111-22-02	-	Heat Balance & Steam Flow Diagram - Maximum Power 32,000 SHP
M-565	4639-111-22-03	-	Heat Balance & Steam Flow Diagram - Port Cargo Operation (Auxiliary Condenser)
M-566	EF-355	6	Std. Funnels & Covers
M-567	EF-358	10	Welding Details for Carbon Steel Class I Piping (Elec. Arc Welding)
M-568	EF-360	17	Standard Pipe Supports Flat Bar & U-Bolt Types
M-569	EF-368-A	2	Boiler Compound Tank
M-570	EF-387-B	22	Details of Extension Stem. Standards

No.	Builder's Plan No.	Alt.	Title
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M-534	111-20-28	-	Fire & Water Service Systems - Fwd. Machinery Space
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M-536	111-20-30	-	Vacuum Priming Systems - Fwd. & Aft. Machy. Spaces
M-537	111-20-31	4	Bilge System - Aft. Machinery Sp.
M-538	111-20-32	3	Clean Ballast System - Aft Machinery Space
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M-546	111-20-41	7	Lube Oil Transfer & Purifying System
M-547	111-20-42	1	Turbine Governor System
M-548	111-20-43	2	Diesel Generator Oil & Exhaust System
M-549	111-20-44	1	Soot Blower Piping Steam & Air
M-550	111-20-45	4	Boiler Water Condensate Test & Chemical Treatment System
M-551	111-20-46	5	Compressed Air System

No.	Builder's Plan No.	Alt.	Title
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M-512	111-20-5	3	Material List
M-513	111-20-6	-	Material List
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M-515	111-20-8	2	General Notes
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M-505	4639-412-14	2	Monorail - Engine Room to Engineers Workshop
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M-507	111-20-0	2	Table of Contents
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No.	Builder's Plan No.	Alt.	Title
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No.	Builder's Plan No.	Alt.	Title
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D-864	392-19-80	2	C & CS - C.P.E. System Electronic Cabinets Removed
D-865	392-19-81	2	C & CS - C.P.E. System Electronic Cabinets Removed
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D-867	392-19-83	2	L.P.E. - Machinery Space Lower Level
D-868	392-19-84	6	L.P.E. - Machinery Space Fwd. Dock & Above
D-869	392-19-85	3	L.P.E. - Second Deck Aft.
D-870	392-19-86	4	L.P.E. - Upper Deck - Aft.
D-871	392-19-87	4	L.P.E. - "F" Deck - Aft.
D-872	392-19-88	6	L.P.E. - "F" & "C" Decks Aft.
D-873	392-19-89	5	L.P.E. - Fwd. & Aft. Tunnel Passage Rod Deck
D-874	392-19-90	3	L.P.E. - Upper Weatherdeck Fwd. & Aft.
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No.	Builder's Plan No.	Alt.	Title
D-721	4639-392-19-24	2	C & CS - Navigated Tube Power Panel - Dwr. #1
D-722	392-19-25	2	C & CS - Conference Panel - Dwr. #21
D-723	392-19-26	3	C & CS - Navaid Lighting Machinery Space Wing, Ctr. #22
D-724	392-19-27	4	C & CS - Navaid Lighting Machinery Space Wing, Ctr. #23
D-725	392-19-28	2	C & CS - Navigated Tube Power Panel No. 4 Ctr. #252
D-726	392-19-29	3	C & CS - Navaid Lighting Rod Sh. Ctr. Dwr. #1
D-727	392-19-30	4	C & CS - Navaid Lighting Rod Sh. #11, Brdge. - Ctr. #12
D-728	392-19-31	3	C & CS - Navaid Lighting Upper Deck - Ctr. #13
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D-730	392-19-33	2	C & CS - Navaid Lighting "A" Deck- Aft. Ctr. #18, 19
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D-64	392-19-59	-	C & CS - Miscellaneous Emergency Electronics Panel - Ctr. #25,261
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No.	Builder's Plan No.	Alt.	Title
D-863	4639-392-19-63	2	C & CS - Radar Detection System
D-865	392-19-65	2	C & CS - Sound Powered Telephone - Engineer's Workshop & Aft. Engine Battery, Ctr. #1 P.I.P. & S.P.
D-867	392-19-64	3	C & CS - Sound Powered Telephone - P.A. Transfer & Radio Rm. Ctr. #1 P.I.P.
D-868	392-19-63	2 - 3	C & CS - Navigation Telephone System Ctr. #27
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D-870	392-19-67	4	C & CS - C.P.E. System Control Console Auxiliary Control
D-871	392-19-68	2	C & CS - Navigating Bridge Interface Panel & Voice Elevation Box.
D-872	392-19-69	2	C & CS - C.P.E. System Electronics Cabinets Valve Control
D-873	392-19-76	3	C & CS - C.P.E. System Electronics Cabinets Valve Control
D-874	392-19-71	1	C & CS - C.P.E. System Main Turbine, Shaft & T/G Data Cabinet Valve Control
D-875	392-19-72	2	C & CS - Fuel Oil Tank Compartment Lubricating Sys. "Ctr. 19"
D-876	392-19-73	2	C & CS - Fuel Oil Tank Overflow & Sh'board Alarm Panel
D-877	392-19-74	2	C & CS - Fuel Oil Tank Sounding System
D-878	392-19-75	2	C & CS - Throttle Control
D-879	392-19-76	2	C & CS - C.P.E. System Boiler Dwr. 1
D-880	392-19-78	2	C & CS - C.P.E. System Boiler Control
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D-882	392-19-95	3	C & CS & Installation Details - Lubricating Protective System

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D-409	392-19-44	1	C & CS - Normal Lighting Forward - "A" Deck Ctr. #139
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D-416	392-19-52	1	C & CS - Radar
D-417	392-19-53	2	C & CS - Whistle, Vigil Signaling & Speed Dvr. Ctr. - P & S Bd.
D-418	392-19-54	4	C & CS - Crew Compass Dvr. & Emergency Power Failure Alarm Panel
D-419	392-19-55	3	C & CS - Oyes Pilot Dyr. Ctr. #12
D-420	392-19-56	3	C & CS - V.H.F. Radiotelephone Radiotelegraph, and Single Sideband Dyr.
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D-423	392-19-60	2	C & CS - Electric Clock System
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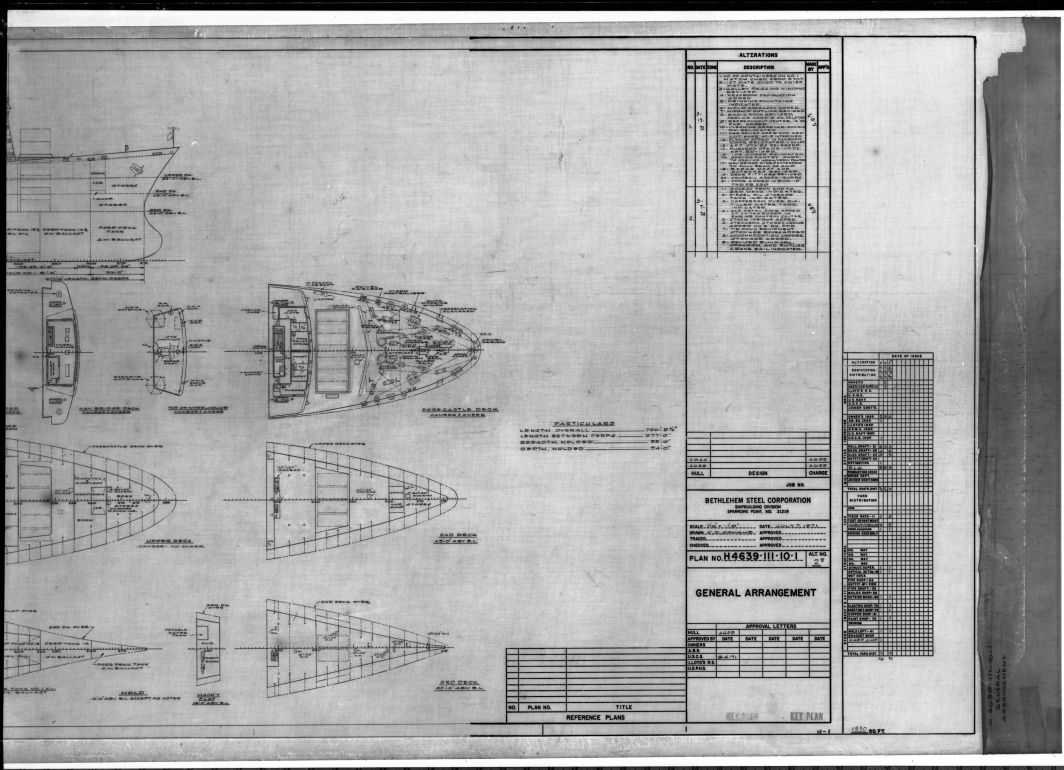

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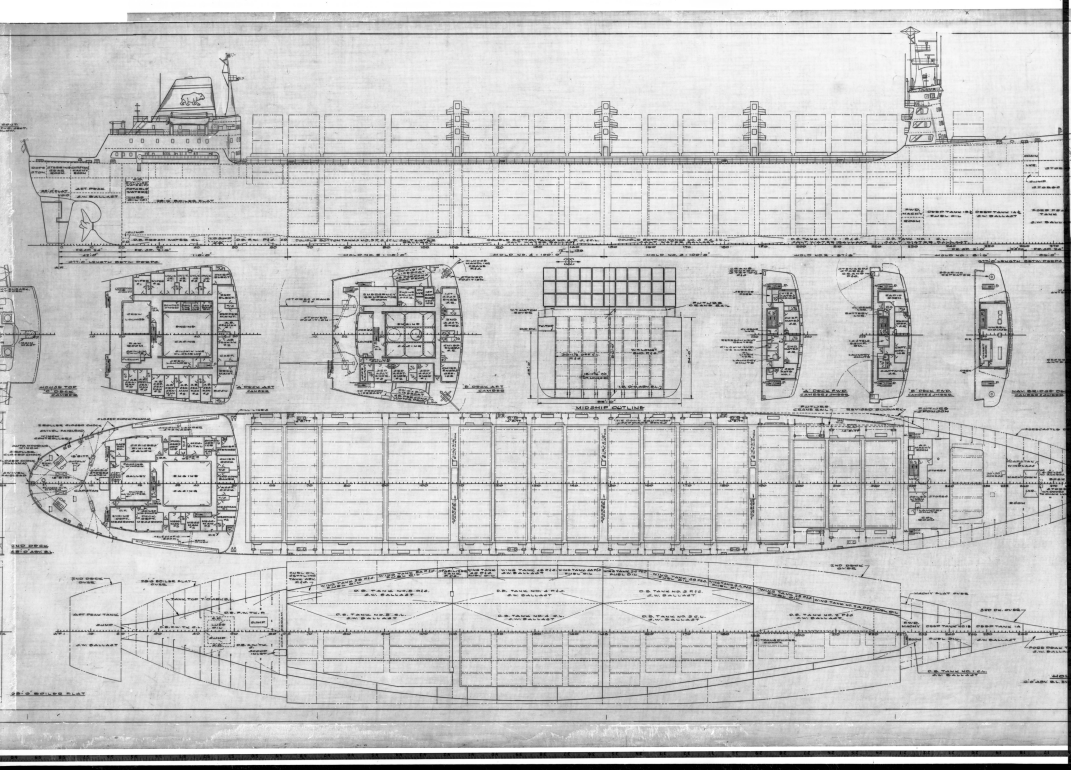

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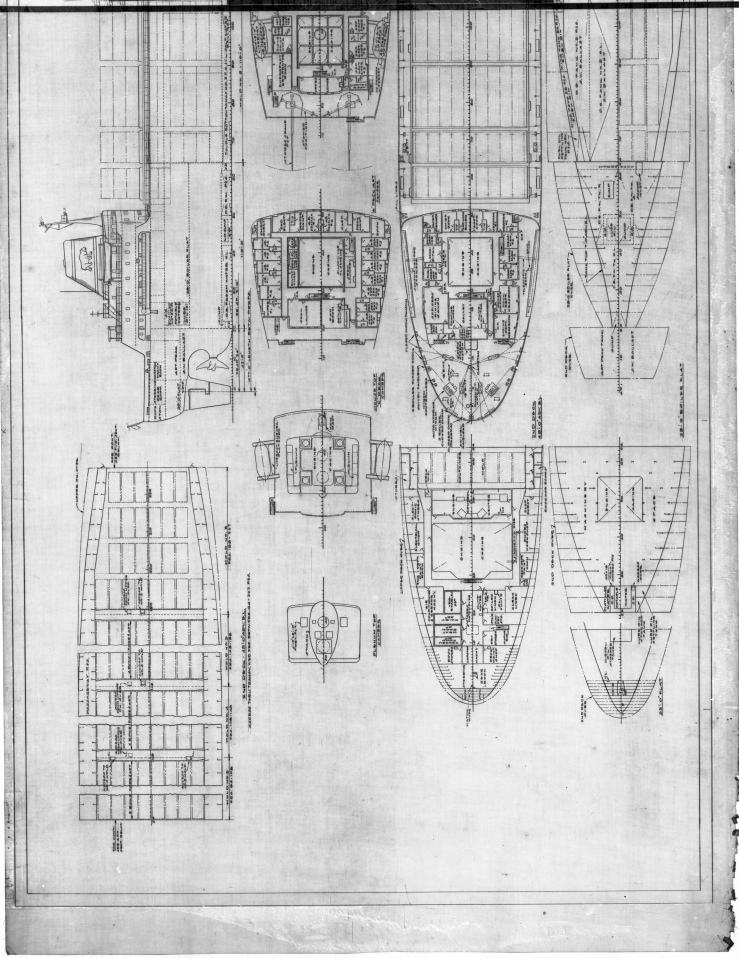

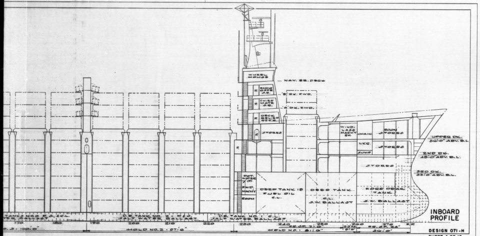

INBOARD PROFILE
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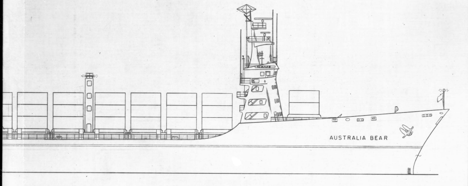

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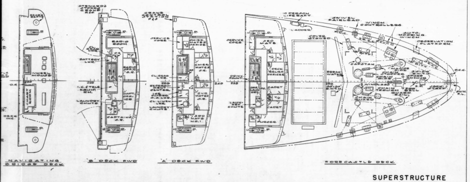

SUPERSTRUCTURE
& FOC'SLE DECKS
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ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO. 321

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/16", 1/8" = 1'-0" DATE JANUARY 2, 1974
DRAWN C.D.SCHAUB APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H-4639-111-11-1 ALT. NO. —

· BOOKLET OF
GENERAL PLANS ·

APPROVAL LETTERS					
HULL	4639				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-28-74				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
REFERENCE PLANS		

	DATE OF ISSUE
ALTERATION	
ENGINEERING DISTRIBUTION	
MAIL: OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R.	
INSPECTION: OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
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MACH. DRAFT.-22	
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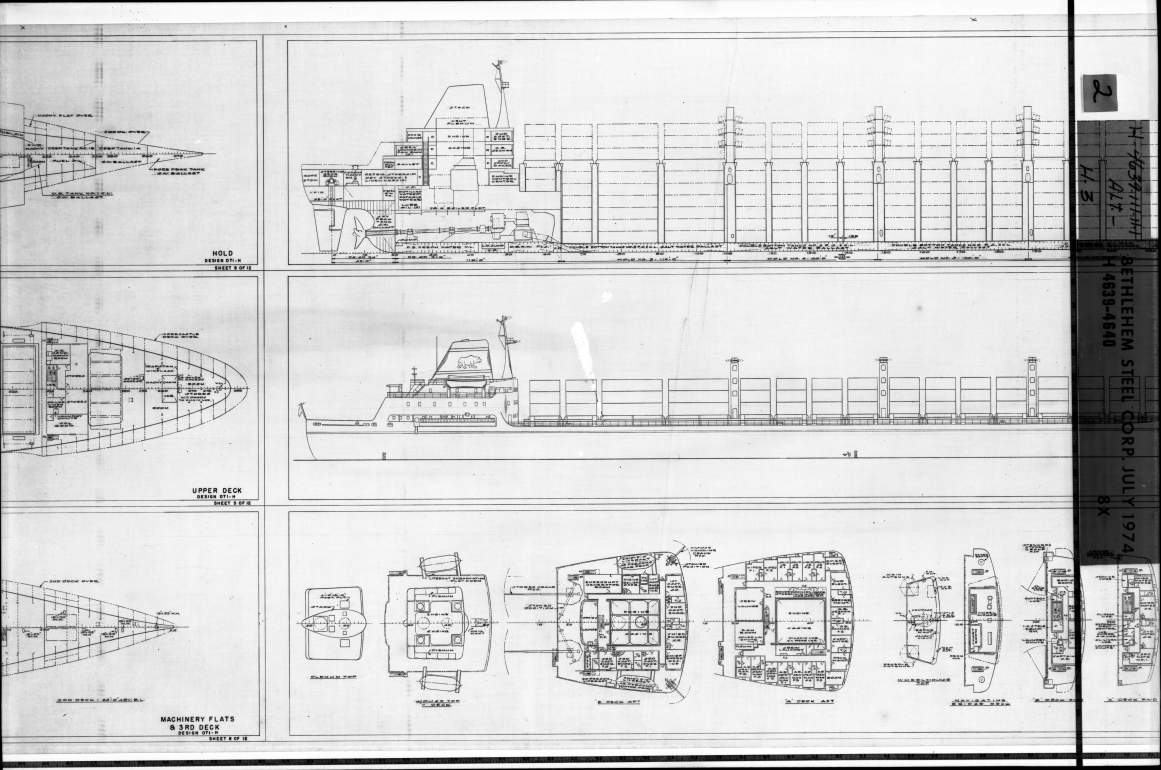

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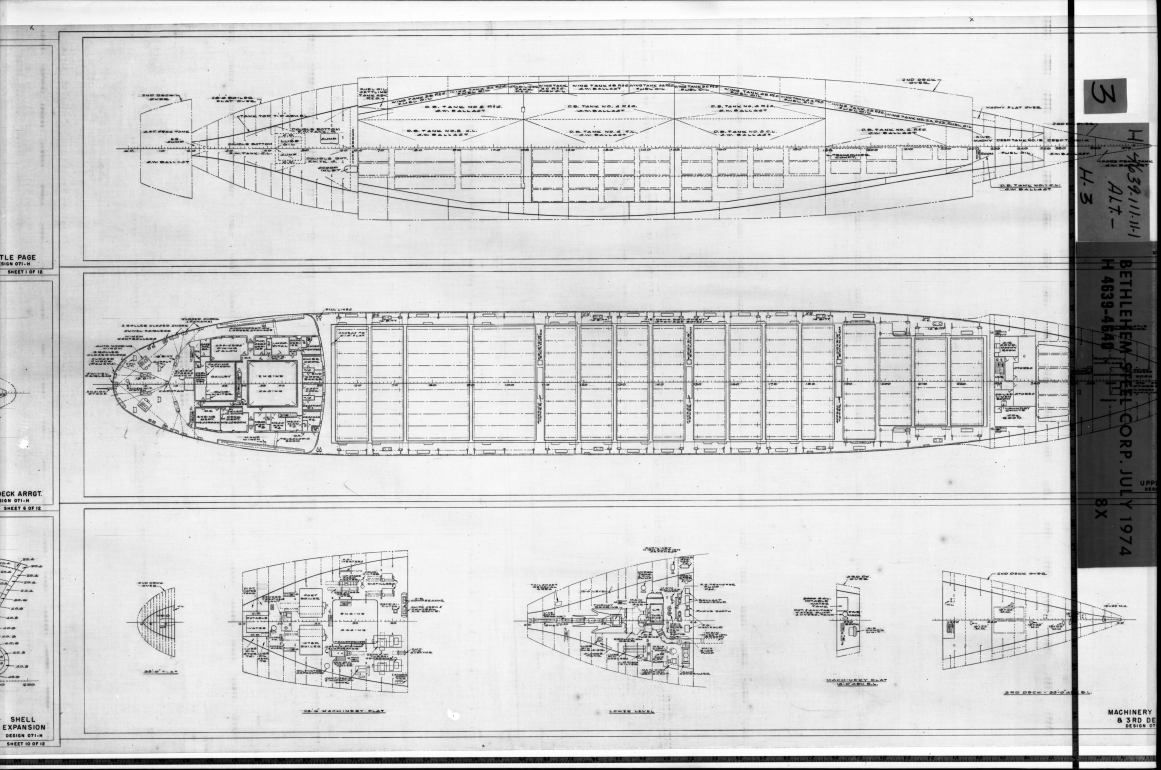
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



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7	CONSTRUCTION PROFILE & 2ND DECK
8	MAIN DECK PLAN & 2ND DECK
9	HOLD
10	SHELL EXPANSION
11	UPPER DECK PLATING
12	VERTICAL SECTIONS

BOOKLET OF GENERAL PLANS

PREPARED BY

BETHLEHEM STEEL CORP

SPARROWS POINT MARYLAND U.S.A.

FOR

PACIFIC FAR EAST LINES

AUSTRALIA BEAR — NEW ZEALAND BEAR

PLAN NO. H4639-III-11-1 C.D. SCHRUB

TITLE PAGE
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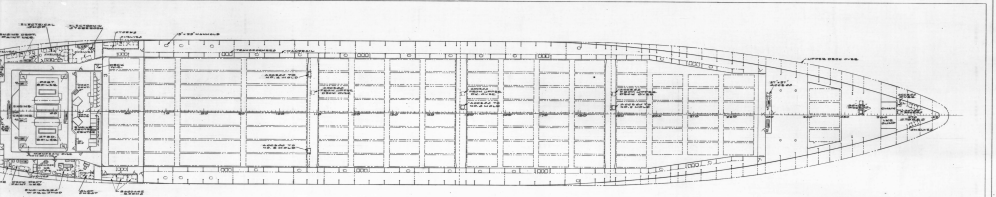

2ND DECK ARRGT.
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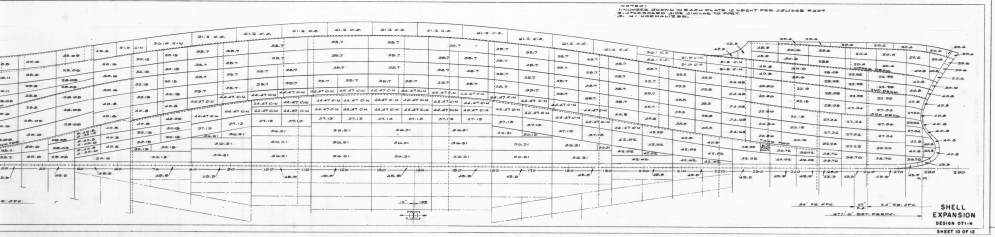

SHELL EXPANSION
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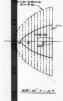

4
H 4639.III-11-1
ALT-
H-3
BETHLEHEM STEEL CORP. JULY 1974
H 4639-III-11-1
8X

WATER BALLAST

NO.	TANKS	FRAMES	CAPACITY (100%) GALLONS	BARRELS	LONG TONS
	FORE PEAK C.L.	260-STEM	90,762	2161	347
1A	DEEPTANK C.L.	246-260	137,844	3282	527
	AFT PEAK C.L.	3-20	165,564	3942	633
	UPPER STAB. P.	104-112	108,822	2591	416
	UPPER STAB. S.	104-112	108,822	2591	416
	LOWER STAB. P.	104-112	89,712	2136	343
	LOWER STAB. S.	104-112	89,712	2136	343
4B	WING TANK - P.	120-136	129,486	3083	495
4B	WING TANK - S.	120-136	129,486	3083	495
1	DBL. BOTTOM C.L.	220-246	59,388	1414	227
2	DBL. BOTTOM - P.	188-220	69,048	1644	264
2	DBL. BOTTOM - S.	188-220	69,846	1663	267
3	DBL. BOTTOM - C.L.	148-188	165,816	3948	634
3	DBL. BOTTOM - P.	148-188	63,042	1501	241
3	DBL. BOTTOM - S.	148-188	63,042	1501	241
4	DBL. BOTTOM C.L.	108-148	165,816	3948	634
4	DBL. BOTTOM - P.	108-148	94,164	2242	360
4	DBL. BOTTOM - S.	108-148	94,164	2242	360
5	DBL. BOTTOM C.L.	64-108	182,028	4334	696
5	DBL. BOTTOM - P.	64-108	63,840	1520	244
5	DBL. BOTTOM - S.	64-108	63,840	1520	244
	TOTAL BALLAST		2,204,244	52482	8427

FRESH AND DISTILLED WATER

NO.	TANKS	FRAMES	CAPACITY (100%) GALLONS	BARRELS	LONG TONS
	DBL. BOTTOM P.	42-62	32,679	778	121.5
	DBL. BOTTOM S.	42-62	33,137	789	123.2
	DBL. BOTTOM C.L.	20-42	37,335	889	138.8
	POTABLE-FWD. P.	227-230	5,527	132	20.5
	POTABLE-AFT C.L.	21-27	17,077	407	63.5
	DISTILLED-FWD	24-27	15,181	361	56.4
	DISTILLED-AFT	20-24	17,425	415	64.8
	TOTAL		158,381	3771	588.7

LUBRICATING OIL

TANKS	FRAMES	CAPACITY (100%) GALLONS	BARRELS	LONG TONS
LUBE OIL SUMP ℄	43-47	6856	163	23.5
LUBE OIL SETT. S	24-27	13883	330	47.6
LUBE OIL STORAGE S	20-24	15599	371	53.5
LUBE OIL SERVICE	61-63	75	2	.3
TOTAL		36383	866	124.9
KEROSENE	61-63	75	2	.3

STORES

SPACE		LOCATION DECK	FRS.	SIDE	BALE CU. FT.
BOSUN'S STORES		2ND	3-9	P.	2293
BOSUN'S STORES		UPPER	265-279	C.L.	4691
STORES		UPPER	234-240	P.	4000
STORES		UPPER	234-240	S.	2449
STORES		2ND	260-279	C.L.	8529
STORES		3RD	260-279	C.L.	5149
BONDED STORES		A	31-36	P.	357
STEWD. SUNDRY STO.		2ND	16-20	S.	1724
DRY STORES		2ND	9-16	S.	2692
STORES		2ND	53-63	P.	223
ELECTRONIC STO.		2ND	44-51	P.	2243
REFRIGERATED STORES	VEGETABLE	2ND	20-26	P.	1496
	DAIRY	2ND	16-20	P.	1081
	MEAT	2ND	12-16	P.	1219
	FROZEN FOOD	2ND	9-12	P.	831

POWER PLANT
BOILERS - 2 - BABCOCK & WILCOX - 2 DRUM, BENT TUBE, ROOF FIRED TYPE - 100,885 LBS/HR. SUPHEAT STEAM - GAGE 850# - TEMP. 950° F.
MAIN TURBINE - DE LAVAL TURBINE INC. 28,800 S.H.P. @ ABT. 106 RPM (NORM)
MAIN REDUCTION GEAR - DE LAVAL TURBINE INC.

PROPELLER
1 - SERVICE PROPELLER - 6 BLADES - RIGHT HAND NICKEL ALUM. BRONZE - DIA. 22'-6"

GENERATING PLANT
2 - TURBO - GENERATORS - WORTHINGTON CORP. 440 V., A.C., 3 PHASE, 60 CYCLE, 2500 K.W., 0.8 PF

STEERING GEAR
LIDGERWOOD MFG. CO. - 4 CYCLE, ELECT. HYD. (DOUBLE RAM)

DECK MACHINERY
ANCHOR WINDLASS - 2 - WESTERN GEAR CORP.
MOORING WINCHES - 4 - MARKEY MACHY. CO. INC.
STERN MOORING CAPSTAN - 1 - WESTERN GEAR CORP.
ACCOMMODATION LADDER WINCH - 2 - WASHINGTON ALUMINUM COMPANY
STORES HANDLING CRANES - 2 - A.C. HOYLE CO.
STEWARD'S STORES CRANES - 2 - A.C. HOYLE CO.
HOSE HANDLING CRANES - 2 - A.C. HOYLE CO.
LIFEBOAT WINCHES - 2 - LANE MARINE TECH. INC.
DUMBWAITER - 1 - KIESLING ELEVATOR CO.

LIFEBOATS, DAVITS & LIFERAFTS
LIFEBOATS - 2 - 26'-0" x 9'-0" x 3'-9" - 48 PERSONS - FIBERGLASS - 1 - DIESEL PROP. - 1 - HAND PROP. LANE MARINE TECH. INC.
LIFERAFTS - 1 - 10 PERSON - 1 - 20 PERSON - INFLATABLE MARINE SAFETY EQUIPMENT CO.
DAVITS - 2 SETS - GRAVITY TYPE - LANE MARINE TECH.

REFRIGERATION PLANT
AIR COOLER - HANKINSON CORP. - SHIPS STORES - BORG-WARNER
AIR CONDITIONING - HIGH SIDE - BORG-WARNER
ROOM - THERM-AIR MFG. CO. - 7 ½ TONS

EMERGENCY DIESEL GENERATOR
ONE - ALBAN TRACTOR CO. - 440 V., A.C., 3 PH., 60 CY., 400 K.W.

EQUIPMENT
ANCHORS - 2 - BALDT - SNUG STOWING - 12,000 LBS
1 - BALDT - SNUG STOWING - 12,000 LBS. (SPARE)
ANCHOR CHAIN - 165 FATHOMS OF 2 7/8" DIA. STUD LINK.
TOWLINE - 800'-0" - 2" DIA. 6x41 PSWR (GALV.)

CONVERSION TABLE

1 LONG TON	2240 LBS.
1 " " SALT WATER	35.0 CU. FT.
1 " " FRESH WATER	36.0 " "
1 " " FUEL OIL	35.45 " "
1 " " LUBE OIL	39.0 " "
1 " " DIESEL OIL	43.0 " "
1 " " KEROSENE	44.0 " "
1 BARREL	5.62 " "
1 BARREL	42.0 GAL.
1 CU. FT.	7.48 GAL.

PARTICULARS

LENGTH OVERALL	720'-5½"
LENGTH BETWEEN PERPS.	677'-0"
BREADTH MOLDED	95'-0"
DEPTH TO UPPER DK. AT SIDE	54'-0"
DRAFT TO ASSIGNED WATERLINE	34'-1⅛"

TONNAGES

NAME		AUSTRALIA BEAR	NEW ZEALAND BEAR
BUILDER'S NO.		H4639	H4640
CALL LETTERS		WCHF	WJBJ
OFFICIAL NUMBER		552818	552819
UNITED STATES	GROSS	23,760.28	23,510.99
	NET	16,094 ∇	15,942 ∇
PANAMA	GROSS	-	
	NET	-	

DIMENSIONS
& CAPACITIES
DESIGN 071-H
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6	2ND DECK ARRANGEMENT
7	SUPERSTRUCTURE DECKS & FOC'SLE DECK
8	MACHINERY FLATS & 3RD DECK
9	HOLD
10	SHELL EXPANSION
11	UPPER DECK PLATING
12	TYPICAL SECTIONS

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H.4639-111-11-1
ALT.-
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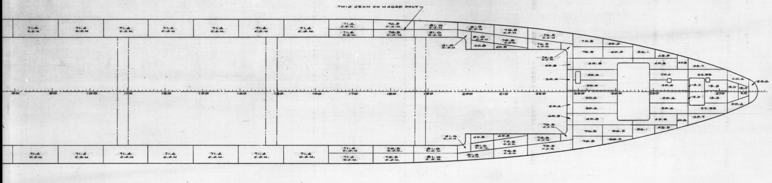
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



UPPER DECK PLATING
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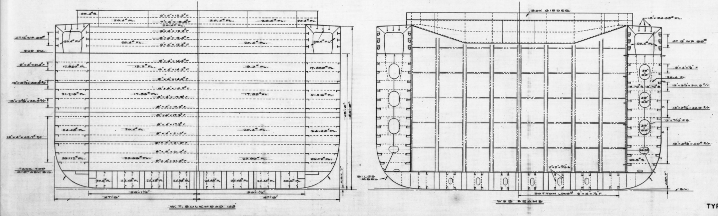

TYPICAL SECTIONS
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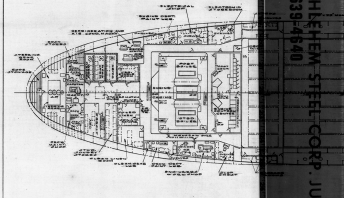

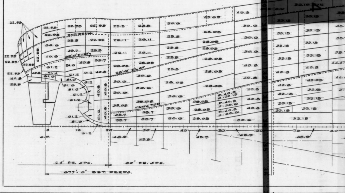

CONTAINERS

⊞ 12' AFT FR.139 L.C.G.: CENTER OF GRAVITY FROM MIDSHIPS IN FT.
F: FWD A: AFT V.C.G.: CENTER OF GRAVITY ABOVE BASELINE IN FT.

HOLD NO.	ROW NO.	FRAMES	L.C.G. (FT.)	TIER ON DECK 9 NO.	9 VCG	8 NO.	8 VCG	7 NO.	7 VCG	UNDERDECK 6 NO.	6 VCG	5 NO.	5 VCG	4 NO.	4 VCG	3 NO.	3 VCG	2 NO.	2 VCG	1 NO.	1 VCG	TOTAL
1.	1	241-249	265.9F	-	-	7	83.3	7	77.1	6	62.1	4	53.8	4	45.6	2	37.3	-	-	-	-	30
2.	1	218-226	208.4F	9	82.8	9	74.5	9	66.3	6	51.6	4	43.3	4	35.1	4	26.8	2	18.6	2	10.3	49
	2	208-216	184.4F	9		9		9		6		6		4		4		4		2		53
	3	199-207	160.8F	10		10		10		6		6		6		4		4		4		60
	4	190-198	136.9F	10		10		10		8		8		6		6		6		4		68
3.	1	179-186	109.6F	11	82.8	11	74.5	11	66.3	8	51.6	8	43.3	8	35.1	6	26.8	6	18.6	4	10.3	73
	2	169-177	87.0F	11		11		11		8		8		8		8		6		6		77
	3	159-167	61.9F	11		11		11		8		8		8		8		8		6		79
	4	150-158	38.3F	11		11		11		8		8		8		8		8		8		81
4.	1	139-147	10.8F	11	82.8	11	74.5	11	66.3	8	51.6	8	43.3	8	35.1	8	26.8	8	18.6	8	10.3	81
	2	129-137	13.1A	11		11		11		8		8		8		8		8		8		81
	3	120-128	36.8A	11		11		11		8		8		8		8		8		8		81
	4	110-118	60.6A	11		11		11		8		8		8		8		8		8		81
5.	1	91-107	88.1A	11	82.8	11	74.5	11	66.3	8	51.6	8	43.3	8	35.1	8	26.8	8	18.6	6	10.3	79
	2	74-90	132.0A	11		11		11		8		8		8		8		6		6		77
	3	64-72	175.9A	11		11		11		8		8		8		6		6		4		73
	4	55-63	200.2A	11		11		11		8	53.3	8	45.4	-		-		-		-		49
TOTAL				170		177		177		128		124		112		104		96		84		1172

FUEL OIL

NO.	TANKS	FRAMES	CAPACITY (100%) GALLONS	BARRELS	LONG TONS
1B	DEEP TANK-C.L.	233-246	190,638	4539	713.6
2A	WING TANK-P.	204-227	82,362	1961	310.9
2A	WING TANK-S.	204-227	82,362	1961	310.9
2B	WING TANK-P.	188-204	63,084	1502	238.1
2B	WING TANK-S.	188-204	63,084	1502	238.1
3A	WING TANK-P.	176-188	61,362	1461	231.6
3A	WING TANK-S.	176-188	61,362	1461	231.6
3B	WING TANK-P.	160-176	105,840	2520	399.5
3B	WING TANK-S.	160-176	105,840	2520	399.5
3C	WING TANK-P.	148-160	92,316	2198	348.5
3C	WING TANK-S.	148-160	92,316	2198	348.5
4A	WING TANK-P.	136-148	96,222	2291	363.2
4A	WING TANK-S.	136-148	96,222	2291	363.2
4C	WING TANK-P.	112-120	64,428	1534	243.2
4C	WING TANK-S.	112-120	64,428	1534	243.2
5A	WING TANK-P.	88-104	118,902	2831	448.8
5A	WING TANK-S.	88-104	118,902	2831	448.8
5B	WING TANK-P.	72-88	102,900	2450	388.4
5B	WING TANK-S.	72-88	102,900	2450	388.4
	F.O. SETTLER-P.	64-72	37,002	881	139.7
	F.O. SETTLER-S.	64-72	37,002	881	139.7
	TOTAL FUEL OIL		1,839,474	43,797	6943.3
	DIESEL OIL	16-20	8,336	198.5	26

WATER BALLAST

NO.	TANKS	FRAMES	CAPACITY (100%) GALLONS	BARRELS	LONG TONS
	FORE PEAK C.L.	260-STEM	90,762	2161	347
1A	DEEP TANK C.L.	246-260	137,844	3282	527
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	DBL. BOTTOM S.	42-62	33,157	789	123.2
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	POTABLE-AFT. C.L.	21-27	17,077	407	63.5
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	DISTILLED-AFT	20-24	17,425	415	64.8
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LUBE OIL STORAGE S	20-24	15599	371	53.5
LUBE OIL SERVICE	61-63	75	2	.3
TOTAL		36383	866	124.9
KEROSENE	61-63	75	2	.3

STORES

SPACE		LOCATION DECK	FRS.	SIDE	BALE CU. FT.
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STORES		UPPER	234-240	P.	4000
STORES		UPPER	234-240	S.	2449
STORES		2ND	260-279	C.L.	8529
STORES		3RD	260-279	C.L.	5149
BONDED STORES		A	31-36	P.	357
STEW'D. SUNDRY STO.		2ND	16-20	S.	1724
DRY STORES		2ND	9-16	S.	2692
STORES		2ND	53-63	P.	223
ELECTRONIC STO.		2ND	44-51	P.	2243
REFRIG-ERATED STORES	VEGETABLE	2ND	20-26	P.	1496
	DAIRY	2ND	16-20	P.	1081
	MEAT	2ND	12-16	P.	1219
	FROZEN FOOD	2ND	9-12	P.	831

POWER PLANT

BOILERS - 2 - [illegible]ABCOCK & WILCOX - 2 DR[illegible]
FIRED TYPE [illegible] 100,885 LBS/HR. SUPHEA[illegible]
GAGE 850[illegible] TEMP. 950° F.
MAIN TURBINE[illegible] DE LAVAL TURBINE IN[illegible]
28,800 S.H.P. @ ABT. 10[illegible]
MAIN REDUCTION GEAR - DE LAVAL T[illegible]

PROPELLER

1 - SERVICE PROPELLER [illegible] BLADES - RI[illegible]
NICKEL AL[illegible]M. [illegible] DIA. 2[illegible]

[illegible]NG PLAN[illegible]

2 - TURBO - GEN[illegible]RA[illegible] [illegible]HINGTO[illegible]
440 V., A.[illegible] [illegible]O CYCL[illegible]

[illegible] GEAR

LIDGERWOO[illegible] M[illegible] [illegible]YCLE, E[illegible]

DECK MA[illegible]INERY

ANCHOR WIND[illegible]ASS - 2 - WESTERN G[illegible]
MOORING WIN[illegible]HES - 4 - MARKEY MAC[illegible]
STERN MOOR[illegible]G CAPSTAN - 1 - WESTE[illegible]
ACCOMMODA[illegible]ION LADDER WIN[illegible]
WASHING[illegible]ON ALUMINUM COM[illegible]
STORES HA[illegible]DLING CRANES - 2 - [illegible]
STEWARD'S [illegible]TORES CRANES - 2 - A.C. [illegible]
HOSE HANDL[illegible]G CRANES - 2 - A.C. H[illegible]
LIFEBOAT W[illegible]NCHES - 2 - LAN[illegible]MAR[illegible]
DUMBWAITER[illegible] - 1 - KIESLING [illegible]LEVAT[illegible]

LI[illegible]BOATS, DAVI[illegible] & LI[illegible]

LIFEBOATS - [illegible] [illegible]'-0" x 8'-0" [illegible]
FIBERGLA[illegible] - [illegible] - DIESEL PROP. - 1 - [illegible]
LANE MA[illegible] TECH. INC[illegible]
LIFERAFTS - [illegible] PERSON - 1 - 20 PE[illegible]
MARINE S[illegible]FETY E[illegible]IP[illegible]NT
DAVITS - 2 [illegible] GRAVITY TYPE - [illegible]

[illegible]

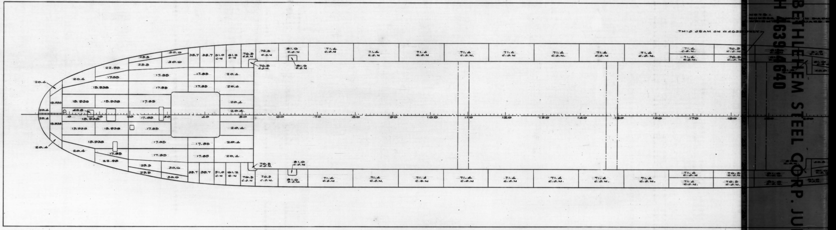
AIR COOLER - [illegible]KINSON CORP. - SHIPS [illegible]
AIR CONDITIONI[illegible] - HIGH ST[illegible] - BORG-W[illegible]
ROOM - THERM-AIR M[illegible]

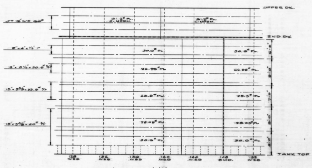
EMER[illegible]NCY DIESEL GENE[illegible]

ONE - ALBAN T[illegible]ACTOR CO. - 440 V. A.C., [illegible]

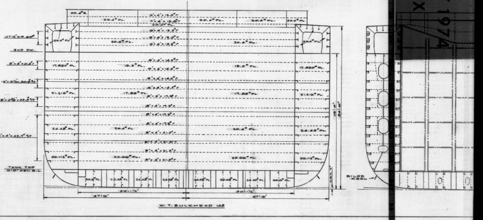
EQUIPMENT

ANCHORS - 2 - [illegible]ALDT - SNUG STOWING [illegible]
1 - [illegible]ALDT - SNUG STOWING [illegible]
ANCHOR CHAIN [illegible] FATHOMS OF 2 7/8" [illegible]
TOWLINE - 80[illegible] - 2" DIA. 6 x 41 PS[illegible]



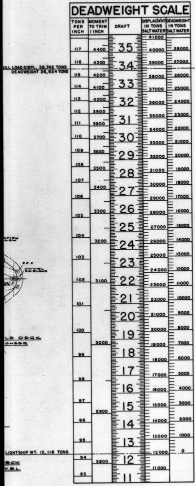


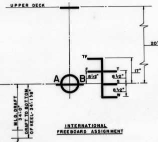
LONG'L BHD. 36'-1 1/2" OFF C.L.



W. T. BULKHEAD 148

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X





INTERNATIONAL FREEBOARD ASSIGNMENT

· PARTICULARS ·

LENGTH OVERALL ________ 720'-5 1/2"
LENGTH BETWEEN PERPENDICULARS ________ 677'-0"
BREADTH, MOLDED ________ 95'-0"
DEPTH TO UPPER DECK AT SIDE ________ 54'-0"
DRAFT TO ASSIGNED WATERLINE ________ 34'-1 1/8"

TURBINES - DELAVAL — 28,000 S.H.P. @ 106 R.P.M.
REDUCTION GEARS ________ DELAVAL
BOILERS - BABCOCK & WILCOX - GAGE 850# — TEMP. 950°F
ELECTRIC GENERATORS - 2 - WORTHINGTON CORP. — 440 V. AC
3 PHASE — 60 CYCLE — 2500 K.V.A. — 0.8 P.F.
PROPELLER — NICKEL ALUM. BRONZE — 6 BLADES — DIA. 22'-6"

TONNAGES

NAME		AUSTRALIA BEAR	NEW ZEALAND BEAR
BUILDER'S NUMBER		H 4639	H 4640
CALL LETTERS		WCHF	WJBJ
OFFICIAL NUMBER		552818	552819
UNITED STATES	GROSS	23,760.28	23510.99
	NET	16,094 V	15,942 V
PANAMA	GROSS		
	NET		
SUEZ	GROSS		
	NET		

CONTAINERS

Ⅲ = 12" AFT FR. 139 L.C.G. - CENTER OF GRAVITY FROM MIDSHIPS IN FEET.
F = FWD. A = AFT *V.C.G. - CENTER OF GRAVITY ABOVE BASELINE IN FEET.

HOLD NO.	ROW NO.	FRAMES	L.C.G. (FT.)	TIER ON DECK 9 NO.	9 V.C.G.	8 NO.	8 V.C.G.	7 NO.	7 V.C.G.	UNDERDECK 6 NO.	6 V.C.G.	5 NO.	5 V.C.G.	4 NO.	4 V.C.G.	3 NO.	3 V.C.G.	2 NO.	2 V.C.G.	1 NO.	1 V.C.G.	TOTAL
1	1	241-249	265.6F	-	-	7	85.3	7	77.1	6	62.1	4	53.8	4	45.6	2	37.3	-	-	-	-	30
2	1	218-226	208.4F	9	82.8	9	74.5	9	66.3	6	51.6	4	43.3	4	35.1	4	26.8	2	18.6	2	10.3	49
	2	209-216	184.4F	9		9		9		6		6		4		4		4		2		53
	3	199-207	160.8F	10		10		10		6		6		6		4		4		4		60
	4	190-198	136.9 F	10		10		10		8		8		6		6		6		4		68
3	1	179-186	109.6F	11	82.8	11	74.5	11	66.3	8	51.6	8	43.3	8	35.1	6	26.8	6	18.6	4	10.3	73
	2	169-177	87.0F	11		11		11		8		8		8		8		6		6		77
	3	159-167	61.9F	11		11		11		8		8		8		8		8		6		79
	4	150-158	38.3F	11		11		11		8		8		8		8		8		8		81
4	1	139-147	10.8F	11	82.8	11	74.5	11	66.3	8	51.6	8	43.3	8	35.1	8	26.8	8	18.6	8	10.3	81
	2	129-137	13.1 A	11		11		11		8		8		8		8		8		8		81
	3	120-128	36.8A	11		11		11		8		8		8		8		8		8		81
	4	110-118	60.6A	11		11		11		8		8		8		8		8		8		81
5	1	91-107	88.1A	11	82.8	11	74.5	11	66.3	8	51.6	8	43.3	8	35.1	8	26.8	8	18.6	6	10.3	79
	2	74-90	132.0A	11		11		11		8		8		8		8		6		6		77
	3	64-72	175.9A	11		11		11		8		8		8		6		6		4		73
	4	55-63	200.2A	11		11		11		8	53.9	8	45.4	-		-		-		-		49
TOTAL				170		177		177		128		124		112		104		96		84		1172

* V.C.G. BASED ON AVERAGE OF 8'-0" AND 8'-6" CONTAINERS

- CONVERSION TABLE -

1 LONG TON ________ 2240 POUNDS
1 " " SALT WATER ________ 35.0 CU.FT.
1 " " FRESH WATER ________ 36.0 " "
1 " " FUEL OIL ________ 35.45 " "
1 " " LUBE OIL ________ 39.0 " "
1 " " DIESEL OIL ________ 43.0 " "
1 " " KEROSENE ________ 44.0 " "
1 BARREL ________ 5.62 " "
1 BARREL ________ 42 GALLONS
1 CU.FT. ________ 7.48 "

FUEL OIL TANKS

NO.	TANKS	FRAMES	CENTER OF GRAVITY FROM Ⅲ	ABV. B.L.	CAPACITY (100 %) GALLONS	BARRELS	LONG TONS
1B	DEEP TANK C.L.	233-246	251.12 F	20.44	190,638	4539	719.6
2A	WING TANK PORT	204-227	190.69 F	25.98	82,362	1961	310.9
2A	WING TANK STBD.	204-227	190.69 F	25.98	82,362	1961	310.9
2B	WING TANK PORT	188-204	142.87 F	26.03	63,084	1502	238.1
2B	WING TANK STBD.	188-204	142.87 F	26.03	63,084	1502	238.1
3A	WING TANK PORT	176-188	107.83 F	27.76	61,362	1461	231.6
3A	WING TANK STBD	176-188	107.83 F	27.76	61,362	1461	231.6
3B	WING TANK PORT	160-176	72.69 F	27.58	105,840	2520	399.5
3B	WING TANK STBD.	160-176	72.69 F	27.58	105,840	2520	399.5
3C	WING TANK PORT	148-160	38.31 F	26.44	92,316	2198	348.5
3C	WING TANK STBD	148-160	38.31 F	26.44	92,316	2198	348.5
4A	WING TANK PORT	136-148	8.45 F	25.92	96,222	2291	363.2
4A	WING TANK STBD.	136-148	8.45 F	25.92	96,222	2291	363.2
4C	WING TANK PORT	112-120	56.49 A	25.86	64,428	1534	243.2
4C	WING TANK STBD.	112-120	56.49 A	25.86	64,428	1534	243.2
5A	WING TANK PORT	88-104	106.12 A	27.01	118,902	2831	448.8
5A	WING TANK STBD.	88-104	106.12 A	27.01	118,902	2831	448.8
5B	WING TANK PORT	72-88	145.92 A	28.33	102,900	2450	388.4
5B	WING TANK STBD.	72-88	145.92 A	28.33	102,900	2450	388.4
	F.O. SETTLER PORT	64-72	176.26 A	32.15	37,002	881	139.7
	F.O. SETTLER STBD.	64-72	176.26 A	32.15	37,002	881	139.7
	TOTAL FUEL OIL				1,839,474	43,797	6943.3
	DIESEL OIL TANK	16-20	300.51 A	40.00	8336	198.5	26

WATER BALLAST TANKS

NO.	TANKS	FRAMES	CENTER OF GRAVITY FROM Ⅲ	ABV. B.L.	CAPACITY (100 %) GALLONS	BARRELS	LONG TONS
	FORE PEAK C.L.	260-STEM	321.60 F	15.53	90,762	2161	347
1 A	DEEP TANK C.L.	246-260	283.92 F	17.94	137,844	3282	527
	AFT PEAK C.L.	3-20	311.15 A	35.90	165,564	3942	633
	UPPER STAB. PORT	104-112	75.39 A	36.00	108,822	2591	416
	UPPER STAB. STBD.	104-112	75.39 A	36.00	108,822	2591	416
	LOWER STAB. PORT	104-112	75.36 A	19.56	89,712	2136	343
	LOWER STAB. STBD.	104-112	75.36 A	19.56	89,712	2136	343
4B	WING TANK PORT	120-136	26.50 A	25.78	129,486	3083	495
4B	WING TANK STBD.	120-136	26.50 A	25.78	129,486	3083	495
1	DBL. BOTTOM C.L.	220-246	232.17 F	3.40	59,388	1414	227
2	DBL. BOTTOM PORT	188-220	158.83 F	3.30	69,048	1644	264
2	DBL. BOTTOM STBD.	188-220	160.90 F	3.29	69,846	1663	267
3	DBL. BOTTOM C.L.	148-188	73.49 F	3.84	165,816	3948	634
3	DBL. BOTTOM PORT	148-188	65.78 F	3.47	63,042	1501	241
3	DBL. BOTTOM STBD.	148-188	65.78 F	3.47	63,042	1501	241
4	DBL. BOTTOM C.L.	108-148	26.50 A	3.04	165,816	3948	634
4	DBL. BOTTOM PORT	108-148	26.41 A	3.32	94,164	2242	360
4	DBL. BOTTOM STBD.	108-148	26.41 A	3.32	94,164	2242	360
5	DBL. BOTTOM C.L.	64-108	131.39 A	3.04	182,028	4334	696
5	DBL. BOTTOM PORT	64-108	120.07 A	3.50	63,840	1520	244
5	DBL. BOTTOM STBD.	64-108	120.07 A	3.50	63,840	1520	244
	TOTAL BALLAST				2,204,244	52482	8427

FRESH AND DISTILLED WATER TANKS

NO.	TANKS	FRAMES	CENTER OF GRAVITY FROM Ⅲ	ABV. B.L.	CAPACITY (100 %) GALLONS	BARRELS	LONG TONS
	DBL. BOTTOM PORT	42-62	208.52 A	3.99	32,679	778	121.5
	DBL. BOTTOM STBD.	42-62	208.40 A	4.02	33,157	789	123.2
	DBL. BOTTOM C.L.	20-42	263.16 A	4.04	37,335	889	138.8
	POTABLE FWD PORT	227-230	224.75 F	23.50	5,527	132	20.5
	POTABLE AFT C.L.	21-27	286.50 A	35.25	17,077	407	63.5
	DISTILLED FWD.	24-27	282.68 A	36.20	15,181	361	56.4
	DISTILLED AFT	20-24	291.34 A	36.49	17,425	415	64.8
	TOTAL FRESH AND DISTILLED WATER				158,381	3771	588.7

LUBRICATING OIL TANKS

NO.	TANKS	FRAMES	CENTER OF GRAVITY FROM Ⅲ	ABV. B.L.	CAPACITY (100 %) GALLONS	BARRELS	LONG TONS
	LUBE OIL SUMP C.L.	47-49	231.50 A	4.99	6,856	163	23.5
	LUBE OIL SETTLER	24-27	282.67 A	36.64	13,853	330	47.6
	LUBE OIL STORAGE	20-24	291.32 A	37.01	15,599	371	53.5
	LUBE OIL SERVICE	61-63	192.50 A	31.60	75	2	.3
	TOTAL LUBE OIL				36,383	866	124.9
	KEROSENE	61-63	192.50 A	31.60	75	2	.3

STORES

SPACE		LOCATION DECK	FRAMES	SIDE	BALE CAPACITY CU. FT.
BOSUN'S STORES		2ND	3-9	PORT	2293
BOSUN'S STORES		UPPER	265-279	C.L.	4691
STORES		UPPER	234-240	PORT	4000
STORES		UPPER	234-240	STBD.	2449
STORES		2ND	260-279	C.L.	8529
STORES		3RD	260-279	C.L.	5149
BONDED STORES		A	31-36	PORT	357
STWD. SUNDRY STORES		2ND	16-20	STBD.	1724
DRY STORES		2ND	9-16	STBD.	2692
STORES		2ND	53-63	PORT	223
ELECTRONIC STORES		2ND	44-51	PORT	2243
REFRIGERATED STORES	VEGETABLE	2ND	20-26	PORT	1496
	DAIRY	2ND	16-20	PORT	1081
	MEAT	2ND	12-16	PORT	1219
	FROZEN FOOD	2ND	9-12	PORT	831

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1.	4-8-74		1. TONNAGES ADDED FOR H4640	C.D.S.	

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/16" = 1'-0" DATE JANUARY 4, 1974
DRAWN C.D. SCHAUB APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639·111·13·1 ALT. NO. 1[1]

CAPACITY PLAN

APPROVAL LETTERS					
HULL	4639				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-28-74				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

KEY PLAN KEY PLAN

		DATE OF ISSUE
	ALTERATION	
	ENGINEERING DISTRIBUTION	
MAIL	OWNERS	
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	
	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
OFFICE	HULL DRAFT.-21	
	MACH. DRAFT.-22	
	ELEC. DRAFT.-23	
	OUTFIT. DRAFT.-25	
	ESTIMATING	
MISC.	PRODUCTION (BCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	CPM	
	PIECE RATE-11	
	TEST DEPARTMENT	
	STRUC. PLANNING	
	GROUND ASSEMBLY	
STRUCTURAL	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL-45	
	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP-52	
	OUTFIT. #1 PIER	
	PIPE DRAFT.-52	
	BOILER SHOP-58	
	OUTSIDE MACH.-60	
	ELECTRIC SHOP-70	
	SHEET MET. SHOP-74	
	COPPER SHOP-51	
	PAINT SHOP-75	
	WELDING	
OTHER	MOLD LOFT-41	
	BRACKET SHOP	
	TOTAL YARD DIST.	

TRIM FOR FRAMING

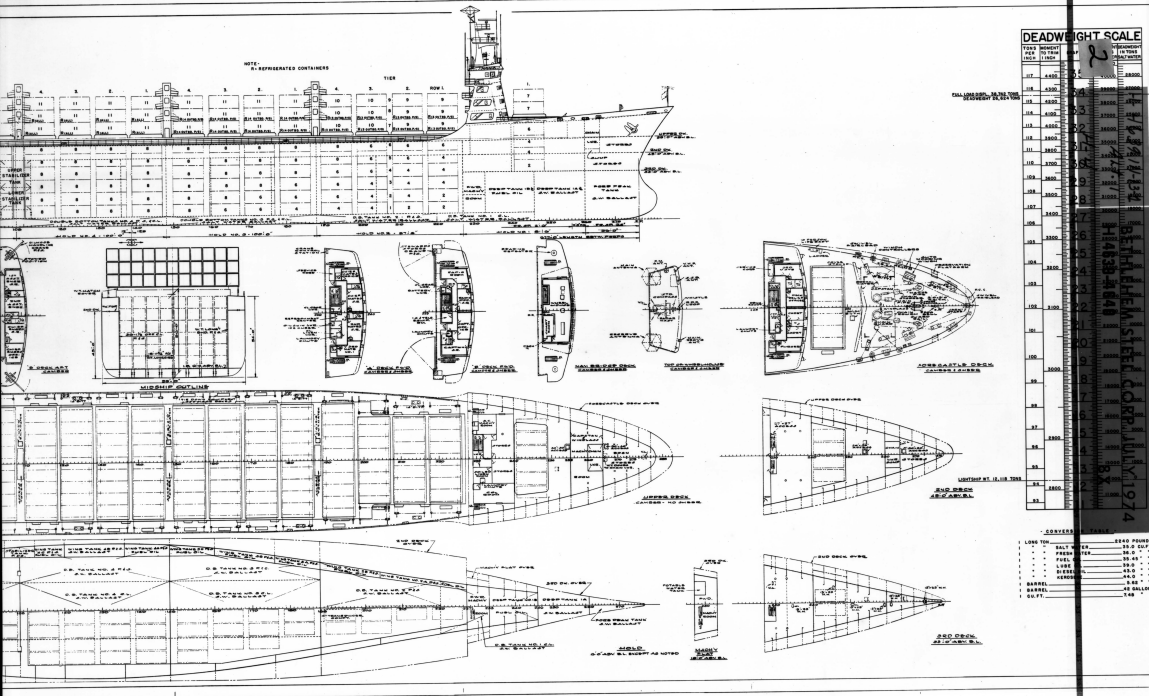
H-4

H 4639-111-13-1
CAPACITY PLAN.

1

H-4639.111-13-1
Alt. 1
H-4

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



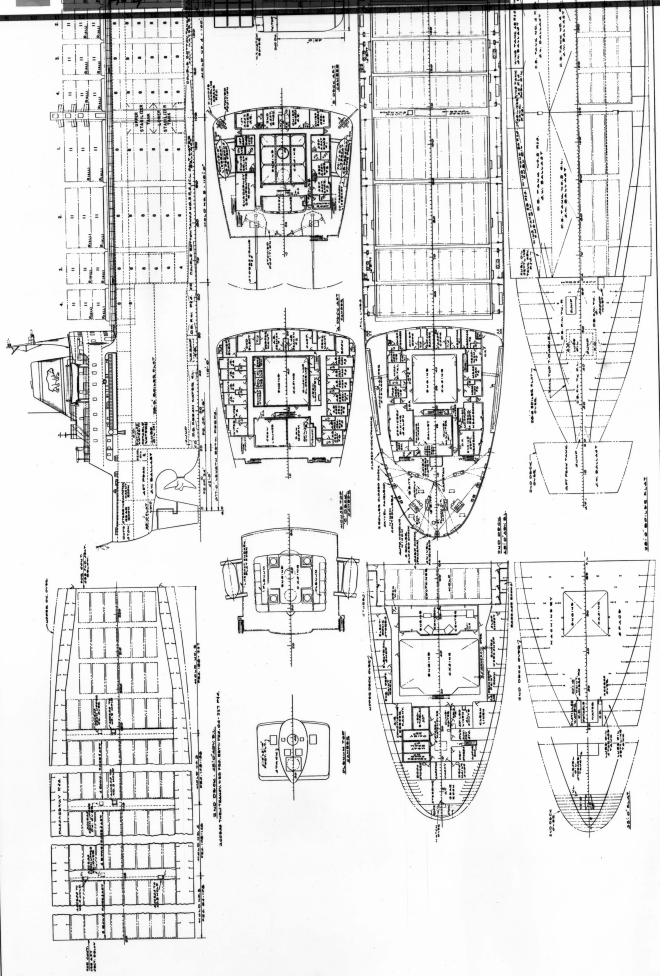
NOTE:
R= REFRIGERATED CONTAINERS
TIER
ROW 1
MIDSHIP OUTLINE
HALBRIDGE DECK
CANBERS 1 AHEAD
TOP OF HOUSE
CANBERS 1 AHEAD
HOUSE CASTLE DECK
CANBERS 1 AHEAD
UPPER DECK
CANBERS - NO AHEAD
2ND DECK
AS 0° ABV. B.L.
LIGHTSHIP WT. 12,118 TONS
HOLD
0°0' ABV. B.L. EXCEPT AS NOTED
MAIN DECK
AS 0° ABV. B.L.
3RD DECK
AS 10° ABV. B.L.
DEADWEIGHT SCALE
TONS PER INCH
MOMENT TO TRIM 1 INCH
DEADWEIGHT IN TONS
FULL LOAD DISP. 36,762 TONS
DEADWEIGHT 24,624 TONS
CONVERSION TABLE
LONG TON 2240 POUNDS
SALT WATER 35.0 CU.FT.
FRESH WATER 36.0 "
FUEL OIL 35.45 "
LUBE OIL 39.0 "
DIESEL OIL 43.0 "
KEROSENE 44.0 "
BARREL 5.62 "
BARREL 42 GALLONS
CU.FT. 7.48 "
BETHLEHEM STEEL CORP. JULY 1974
H4639-4640
BX

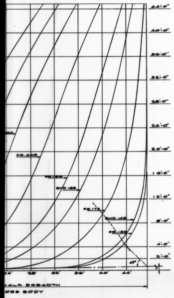
3

H-4639.111-13-1
ALT. 1
H-4

BETHLEHEM STEEL CORP. JULY 1974
H 4638-4640

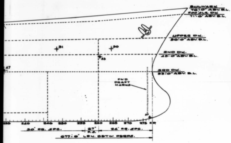
8X

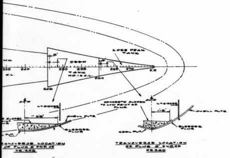




LIST OF OVERBOARD DISCHARGES

ITEM NO.	SERVICE	SIZE OPENING	SHIP SIDE	℄ LOCATION TO FRAME	℄ DISTANCE ABV. B.L.	DIST. OFF ℄
1.	MAIN CIRC. PUMP HIGH SEA SUCTION	5'8×10'0	S	FR. 56-60	11'-6"	29'-11"
	AUX. CIRC. PUMP HIGH SEA SUCTION	↓	↓	↓	↓	↓
	VENT FOR SEACHEST ITEM 1.	↓	↓	↓	↓	↓
	STEAMING OUT FOR ITEM 1.	↓	↓	↓	↓	↓
2.	MAIN CIRC. PUMP LOW SEA SUCTION	5'8×12'6	S	FR. 56-61	3'-0"	20'-3"
	AUX. CIRC. PUMP LOW SEA SUCTION	↓	↓	↓	↓	↓
	VENT FOR SEACHEST ITEM 2.	↓	↓	↓	↓	↓
	STEAMING OUT FOR ITEM 2.	↓	↓	↓	↓	↓
3.	MAIN CONDENSER DISCHARGE SCOOP	3'-6"×7'-0	P	FR 53-56	10'-9"	27'-11"
4.	MAIN CONDENSER INLET SCOOP	3'-4×11'-7	S	FR 66-72	0"	13'-7 5/16"
	FLUSHING OUT FOR ITEM 4.	↓	↓	↓	↓	↓
	STEAMING OUT FOR ITEM 4.	↓	↓	↓	↓	↓
5.	S.W. SERV. PUMP SEA SUCTION-FWD. MACH.S.	22×19"	P	FR. 231-232	3'-0"	11'-3 3/4"
	FIRE PUMP SEA SUCTION-FWD. MACH'Y SP.	↓	↓	↓	↓	↓
	VENT FOR SEACHEST ITEM 5.	↓	↓	↓	↓	↓
	STEAMING OUT FOR ITEM 5.	↓	↓	↓	↓	↓
6.	HIGH SUCTION SEACHEST-GEN. SERV. & DIST. P.	22"×30"	P	FR. 58-59	20'-0"	36'-3 5/8"
	VENT FOR SEACHEST ITEM 6.	↓	↓	↓	↓	↓
	STEAMING OUT FOR ITEM 6	↓	↓	↓	↓	↓
7.	GEN. SERV. PUMP SUCTION - LOW INJECT. SEACHEST	2'6"×7'6	P	FR. 57-60	2'-0"	18'-3 3/4"
	FIRE PUMP SUCTION - LOW INJECT. SEACHEST	↓	↓	↓	↓	↓
	BALLAST PUMP SEA SUCTION	↓	↓	↓	↓	↓
	S.W. SERV. PUMP SUCTION - AFT MACH'Y SPACE	↓	↓	↓	↓	↓
	DIST. FEED PUMP SUCTION - LOW INJECT. S.C.	↓	↓	↓	↓	↓
	VENT FOR SEACHEST ITEM 7.	↓	↓	↓	↓	↓
	STEAMING OUT FOR ITEM 7.	↓	↓	↓	↓	↓
8.	MAIN CONDENSER OVERBOARD DISCH.	12"D.	P	14" FWD. 52	15'-9"	29'-6 1/2"
9.	AUX. CONDENSER OVERBOARD DISCH.	16"D.	S	15" FWD. 55	17'-0"	31'-11 1/2"
10.	LUBE OIL COOLER OVBD. DISCH.	10"D	S	15" FWD. 44	19'-3"	26'-1"
	LUBE OIL COOLER OVBD. DISCH.	↓	↓	↓	↓	↓
11.	AIR COND. COND. OVBD. DISCH. AFT QTRS.	4"D	P	7 1/2" AFT 29	18'-0"	11'-6 1/4"
	SHIP'S SERV. REFRIG. COND. OVBD. DIS.	↓	↓	↓	↓	↓
12.	TURBO-GEN. L.O. & AIR COOLERS OVBD. DIS.	5"D	S.	12" FWD 56	22'-6"	36'-10"
	CONTAM. DRAIN COOLER OVBD. DISCH.	↓	↓	↓	↓	↓
13.	MAIN FEED PUMP L.O. COOLER OVBD. D.	1 1/4" D.	P	12" FWD 34	20'-0"	17'-10 5/8"
14.	AIR COND. COND. CIRC. WATER OVBD. DISCH.	3 1/2" D	S	12" AFT 231	19'-7"	18'-10"
15.	OILY BILGE PUMP OVBD. DISCHARGE	4"D.	S	18" FWD. 42	18'-0"	23'-5 1/4"
16.	AFT BILGE PUMP OVBD. DISCHARGE	8"D.	S	18" FWD. 54	22'-6"	35'-8 1/4"
17.	CONTROL RM. AIR COND. COND. CIRC W. O.D.	2"D.	P	18" FWD. 41	18'-0"	22'-7"
18.	DISTILLER OVBD. DISCH. UNIT NO. 1	3"D.	P	6" AFT 58	22'-6"	37'-6 7/8"
	DISTILLER OVBD. DISCH. UNIT NO. 2	↓	↓	↓	↓	↓
19.	BALLAST & GEN. SERV. PUMPS-OVBD DISCH.	10"D.	P	15" FWD. 54	19'-2"	33'-2 1/4"
20.	LOW PRESS. STM. GEN. OVBD. DISCHARGE	2"D.	S	12" AFT 47	19'-0"	27'-5 5/8"
21.	BOILER BLOW OVBD. DISCH. PORT	1 1/2" D.	P	15" FWD. 36	19'-0"	19'-5"
22.	BOILER BLOW OVBD. DISCH. STBD.	1 1/2" D.	S	15" AFT. 36	19'-0"	18'-0 3/4"
23.	BILGE PUMP OVBD. DISCHARGE - FWD.	2 1/2" D.	P	20" AFT 230	12'-9"	17'-4 1/2"
24.	S.W. BALLAST TANK OVERFLOW	12"D.	P/S	18" FWD. 120	46'-1 1/2"	47'-6"
25	S.W. BALLAST TANK OVERFLOW	8"D.	P	6" AFT 232	48'-3"	32'-8 1/4"
26	F.O. SETTLING TANK OVERFLOW & VENT	14"D.	P/S	15" FWD. 84	48'-4 1/2"	47'-6"
27	S.W. BALLAST TANK OVERFLOW	8"D.	P/S	9" FWD. 188	48'-0"	47'-6"
28	↓	12"D.	P/S	18" FWD. 96	48'-4 1/2"	47'-6"
29	↓	8"D.	P/S	6" AFT. 123	48'-4 1/2"	47'-6"
30	↓ ·P	8"D.	P	9" FWD. 264	48'-6"	14'-3"
31	↓ ·P	8"D.	P	16" AFT 248	48'-6"	24'-11 1/4"
32	AFT PEAK TANK - OVERBOARD DISCH.	8"D.	S	7" AFT 5	50'-11 1/2"	27'-5"
33	CHAIN LOCKER - OVERBOARD DISCHARGE	5"D.	S	12" FWD 260	43'-8"	13'-3"
34	FREON RELIEF OVERBOARD DISCHARGE-FWD	1/2" D.	S	232-233	23'-9"	19'-0"
35	FREON RELIEF OVERBOARD DISCHARGE-AFT	1/2" D.	P	25-26	50'-9"	39'-2"
36	DRAFT INDICAT. SYSTEM - AFT MACH'Y SPACE	1 1/2" D.	S	12" FWD. 20	2"	7"
37	DRAFT INDICAT. SYSTEM - FWD MACH'Y SPACE	1 1/2" D	P	6" AFT 278	2'-2"	6"
38	UPPER DECK SCUPPERS	4"D.	P/S	8" FWD. 48	12" BEL. UP. DK.	46'-4 1/2"
39	↓	↓	↓	12" AFT 20	↓	36'-10 5/8"
40	↓	↓	↓	12" AFT 5	↓	28'-1 1/4"
41	↓	↓	↓	6" FWD. STERN	46'-0"	5'-6 3/8"
42	↓	↓	↓	15" FWD. 30	12" BEL. UP. DK	42'-1"
43	ECHO DEPTH SOUNDER	16"D.	S	15" FWD. 188	0"	4'-6"
44	GARBAGE CHUTE	12"D.	P	11 1/2" FWD. 19	46'-3"	33'-9"
45	SEWAGE TREATMENT PLANT OVBD. DISCH.	5"D.	P/S	FR. 27-28	36'-3"	30'-6"
46	REEFER DRAINS OVERBOARD DISCHARGE	3"D.	P.	FR. 27-28	37'-2"	31'-6"
47	FWD. SEWAGE MAIN OVERBOARD DISCH.	5"D.	S.	FR. 232-233	34'-0"	23'-6"





-PARTICULARS-

LENGTH OVERALL .... 720'-5 1/2"
LENGTH BETW. PERPS. .... 677'-0"
BREADTH, MOLDED .... 95'-0"
DEPTH, MOLDED .... 54'-0"
HT. RADAR MAST ABOVE B.L. .... 140'-6"
HT. MAINMAST ABOVE B.L. .... 128'-0"
LIGHT SHIP DISPLACEMENT .... 12,118 TONS
DRAFT - LIGHT SHIP DISPL. FWD-6'-9 3/4"
— AFT- 18'-4 5/16"
FULL LOAD DISPLACEMENT .... 38,742 TONS
DRAFT AT FULL LOAD DISPL. .... 34'-1 1/8" E.K.

BETH NO.	MARAD NO.	SHIP'S NAME
4639	253	AUSTRALIA BEAR
4640	254	NEW ZEALAND BEAR

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	2-22-73		1-REVISED TO SUIT COMMENTS OF G.G. SHARP LETTER 5-24-72	C.D.S.	

REFERENCE PLANS

NO.	PLAN NO.	TITLE
18.	H4639-129-15-28	FND. FOR ECHO DEPTH SOUND. TRANS.
17.	↓ -353-1	PROPELLER
16.	-372-2	DET. OF OVERBOARD DISCHARGE FITTINGS
15.	M4639-372-1	LIST OF SEA VALVES & FITTINGS
14.	↓ -372-7	LOW SUCT. SEACHEST-FIRE, BALLAST WAT. SERV. & DIST.
13.	-372-9	HIGH SUCTION SEACHEST-GEN. SERV. & DIST. PUMP
12.	-372-4	MAIN & AUX. CIRC. PUMP HIGH SUCT. SEACHEST
11.	-372-3	MAIN & AUX. CIRC. PUMP LOW SUCT. SEACHEST
10.	-372-2	MAIN INJECTION DISCHARGE SCOOP
9.	-372-1	MAIN INJECTION INLET SCOOP
8.	-232-11	DRAFT, FREEBOARD MKS. & PAINT LINES
7.	-232-7	RUDDER & PROP. LIFTING EYE PADS
6.	-185-1	AUX. SEACHEST - FWD. MACH'Y SPACE
5.	-181-1	BLEEDER PLUGS AND SCUPPERS ARRGT.
4.	-129-05-5	BILGE KEEL
3.	-129-03-17	LONG'L BHD - 36'-1 1/2" OFF C.L. FRS. 127-142
2.	-129-03-7	INNERBOTTOM FLOORS FRS. 111-174
1.	H4639-111-10-1	GENERAL ARRANGEMENT

HULL	DESIGN	CHARGE
4640		
4639	PFEL CONTAINERSHIP	4639

JOB NO. 323

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED DATE MAY 8, 1972
DRAWN C.D. SCHAUB APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639-111-13-2 ALT. NO. 1[1]

-DOCKING PLAN-

APPROVAL LETTERS					
HULL	4639				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS					
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

		DATE OF ISSUE
	ALTERATION	
	ENGINEERING DISTRIBUTION	
MAIL	OWNERS	
	AMERICAN BUREAU	
	LLOYD'S R.S.	
	U.S.M.A.	
	U.S. NAVY	
	U.S.C.G.	
	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	
	AM. BU. INSP.	
	LLOYD'S INSP.	
	U.S.M.A. INSP.	
	U.S. NAVY INSP.	
	U.S.C.G. INSP.	
OFFICE	HULL DRAFT.-21	
	MACH. DRAFT.-22	
	ELEC. DRAFT.-23	
	OUTFIT. DRAFT.-25	
	ESTIMATING	
MISC.	PRODUCTION (BCD)	
	ORDER DEPT.	
	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	GPM	
	PIECE RATE-11	
	TEST DEPARTMENT	
	STEEL PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	NO. WAY	
	STRUCT. SUPER.	
	OPTICAL DETAIL-45	
	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP-52	
	OUTFIT. #1 PIER	
	PIPE DRAFT.-52	
	BOILER SHOP-56	
	OUTSIDE MACH.-60	
	ELECTRIC SHOP-70	
	SHEET MET. SHOP-74	
	COPPER SHOP-51	
	PAINT SHOP-75	
	WELDING	
OTHER	MOLD LOFT-41	
	BRACKET SHOP	
	TOTAL YARD DIST.	

3 2 1

H-5

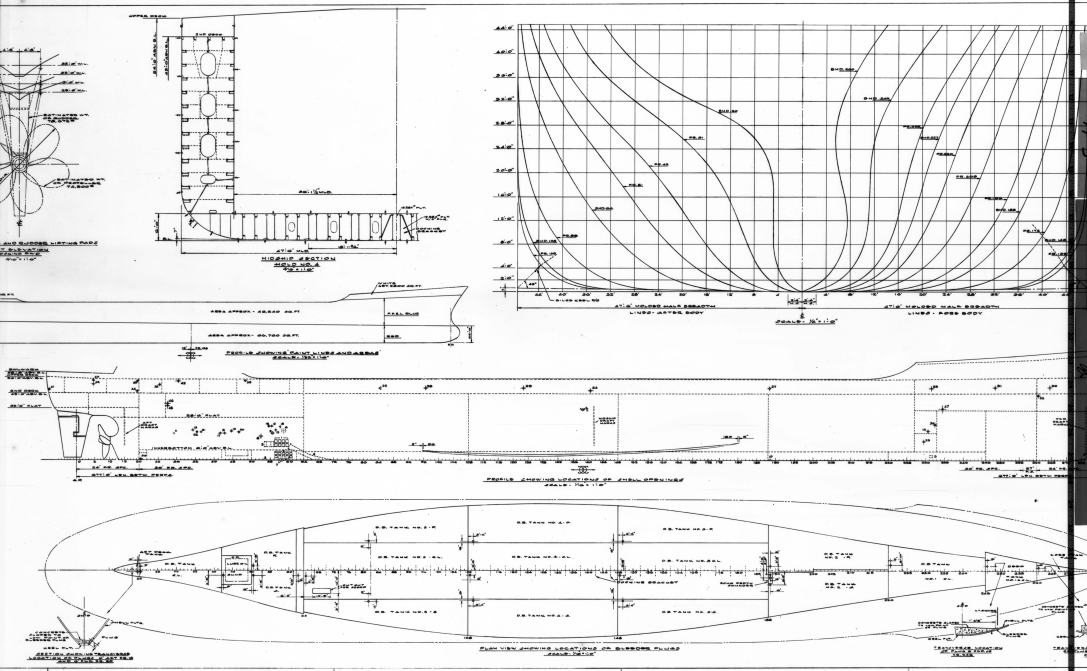
16.25 SQ. FT.

H4639-111-13-2
DOCKING PLAN

1

H-4639.111.13-2
ALT. 1
H-5

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



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H-4639.111.13-2
ALT.
H-5

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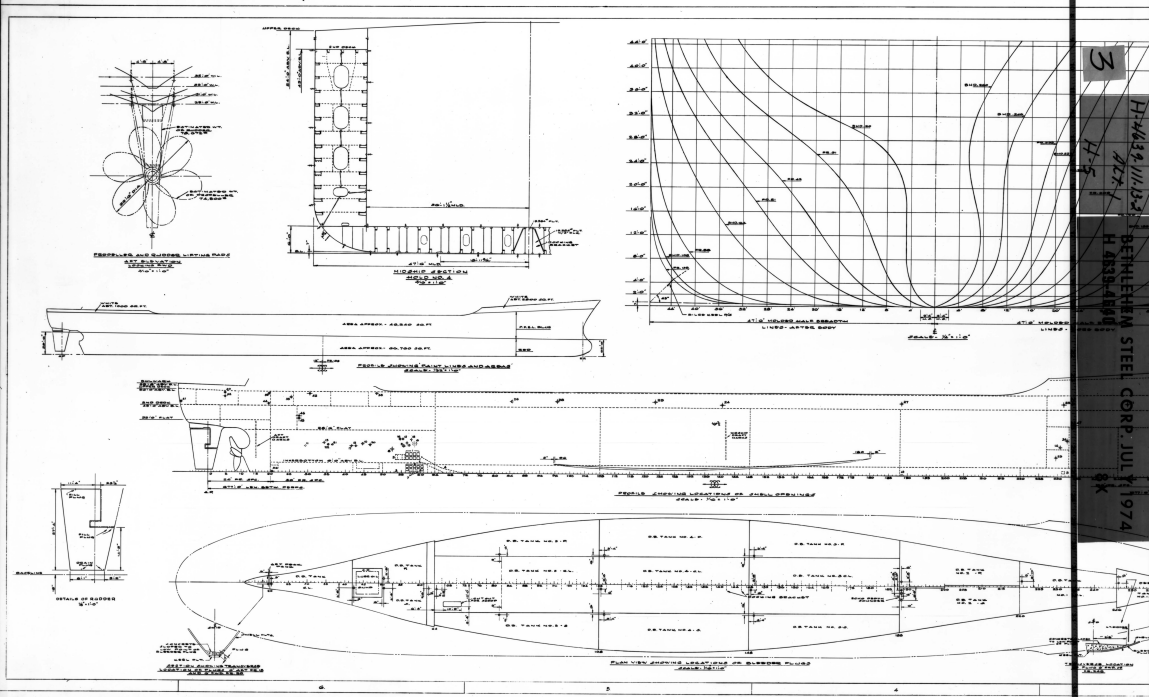
H 4639-4640
8X



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H 4639-4640
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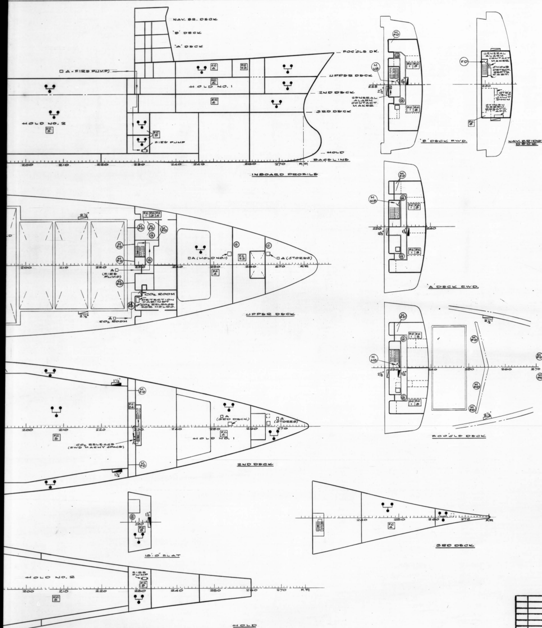


LEGEND

(M HB)	MAGNETIC HOLD BACK FIRE DOOR CONTROLLED FROM WHEELHOUSE
(FD)	NORMALLY CLOSED FIRE DOOR.
(M FD)	MANUAL FIRE DAMPER, SLIDING DOOR, CANVAS, BUTTERFLY OR HINGED.
(FL FD)	FUSIBLE LINK FIRE DAMPER.
FC 1	FAN CONTROL AIR COND. SYS. 1-233-2 IN FAN ROOM & WHEELHOUSE
FC 2	FAN CONTROL AIR COND. SYS. 01-23-1 IN FAN ROOM & WHEELHOUSE
FC 3	FAN CONTROL EXH. SYS. 1-235-2 IN FAN ROOM & WHEELHOUSE
FC 4	FAN CONTROL SUP. SYS. 1-231-2 IN FAN ROOM & WHEELHOUSE
FC 5	FAN CONTROL SUP. SYS. 2-188-2 STBD. TUNNEL & WHEELHOUSE
FC 6	FAN CONTROL SUP. SYS. 2-188-1 IN STBD. TUNNEL & WHEELHOUSE
FC 7	FAN CONTROL SUP. SYS. 2-148-1 IN STBD TUNNEL & WHEELHOUSE
FC 8	FAN CONTROL SUP. SYS. 2-108-1 IN STBD TUNNEL & WHEELHOUSE
FC 9	FAN CONTROL EXH. SYS. 2-227-1 AT MOTOR & WHEELHOUSE
FC 10	FAN CONTROL SUP. SYS. 02-33-1 AT CONTROL STATION, EMERG. STOP STATION & WHEELHOUSE
FC 11	FAN CONTROL SUP. SYS. 02-33-2 AT CONTROL STATION, EMERG. STOP STATION & WHEELHOUSE
FC 12	FAN CONTROL SUP. SYS. 02-43-1 AT CONTROL STATION, EMERG. STOP STATION & WHEELHOUSE
FC 13	FAN CONTROL SUP. SYS. 02-43-2 AT CONTROL STATION, EMERG. STOP STATION & WHEELHOUSE
FC 14	FAN CONTROL EXH. SYS. 03-36-1 AT CONTROL STATION, EMERG. STOP STATION & WHEELHOUSE
FC 15	FAN CONTROL EXH. SYS. 03-36-2 AT CONTROL STATION, EMERG. STOP STATION & WHEELHOUSE.
FC 16	FAN CONTROL EXH. SYS. 01-22-1 IN FAN ROOM & WHEELHOUSE
FC 17	FAN CONTROL SUP. SYS. 01-21-1 IN FAN ROOM & WHEELHOUSE
FC 18	FAN CONTROL EXH. SYS. 01-25-1 IN FAN ROOM & WHEELHOUSE
FC 19	FAN CONTROL SUP. SYS. 2-17-3 AT MOTOR & WHEELHOUSE
FC 20	FAN CONTROL EXH. SYS. 2-17-1 AT MOTOR & WHEELHOUSE
FC 21	FAN CONTROL SUP. SYS. 2-C-1 AT MOTOR & WHEELHOUSE
FC 22	FAN CONTROL SUP. SYS. 2-C-2 AT MOTOR & WHEELHOUSE
FC 23	FAN CONTROL EXH. SYS. 1-256-2 AT MOTOR & WHEELHOUSE
FC 24	FAN CONTROL SUP. SYS. 2-228-2 AT MOTOR & WHEELHOUSE
□A	ACCESS TO COMPARTMENT
	FIRE STATION - INTERIOR - FITTED OUT IN ACCORD. W/ SPECS. & U.S.C.G. REGS.
	FIRE STATION - EXTERIOR - FITTED OUT IN ACCORD. W/ SPECS. & U.S.C.G. REGS.
	FIXED CO_2 FIRE EXTINGUISHING SYS.
	SMOKE DETECTOR
(G)	GENERAL ALARM GONG

BULKHEAD CLASSIFICATION

———	A
═══	B
- - - -	C

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.

HULL	DESIGN	CHARGE
4640		
4639		

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/8" = 1'-0" DATE MAY 30, 1972
DRAWN G.D. SCHAUB APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639-111-13-3 ALT. NO. —

·FIRE CONTROL PLAN·

APPROVAL LETTERS					
HULL	4639				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS					
A.B.S.					
U.S.C.G.	6-13-72				
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE

REFERENCE PLANS

H-6

TRIM FOR FRAMING

	DATE OF ISSUE
ALTERATION	
ENGINEERING DISTRIBUTION	
MAIL: OWNERS	
AMERICAN BUREAU	
LLOYD'S R.S.	
U.S.M.A.	
U.S. NAVY	
U.S.C.G.	
JOINER CONT'R.	
INSPECTION: OWNER'S INSP.	
AM. BU. INSP.	
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	
OFFICE: HULL DRAFT. - 21	
MACH. DRAFT. - 22	
ELEC. DRAFT. - 23	
OUTFIT. DRAFT. - 25	
ESTIMATING	
MISC.: PRODUCTION (SCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	
YARD DISTRIBUTION	
YARD: GPM	
PIECE RATE - 11	
TEST DEPARTMENT	
STRUC. PLANNING	
GROUND ASSEMBLY	
STRUCTURAL: NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL - 45	
WET DOCK	
MACH'Y & OUTFIT.: PIPE SHOP - 52	
OUTFIT. #1 PIER	
PIPE DRAFT. - 52	
BOILER SHOP - 58	
OUTSIDE MACH. - 60	
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	
COPPER SHOP - 51	
PAINT SHOP - 75	
WELDING	
OTHER: MOLD LOFT - 41	
BRACKET SHOP	
TOTAL YARD DIST.	

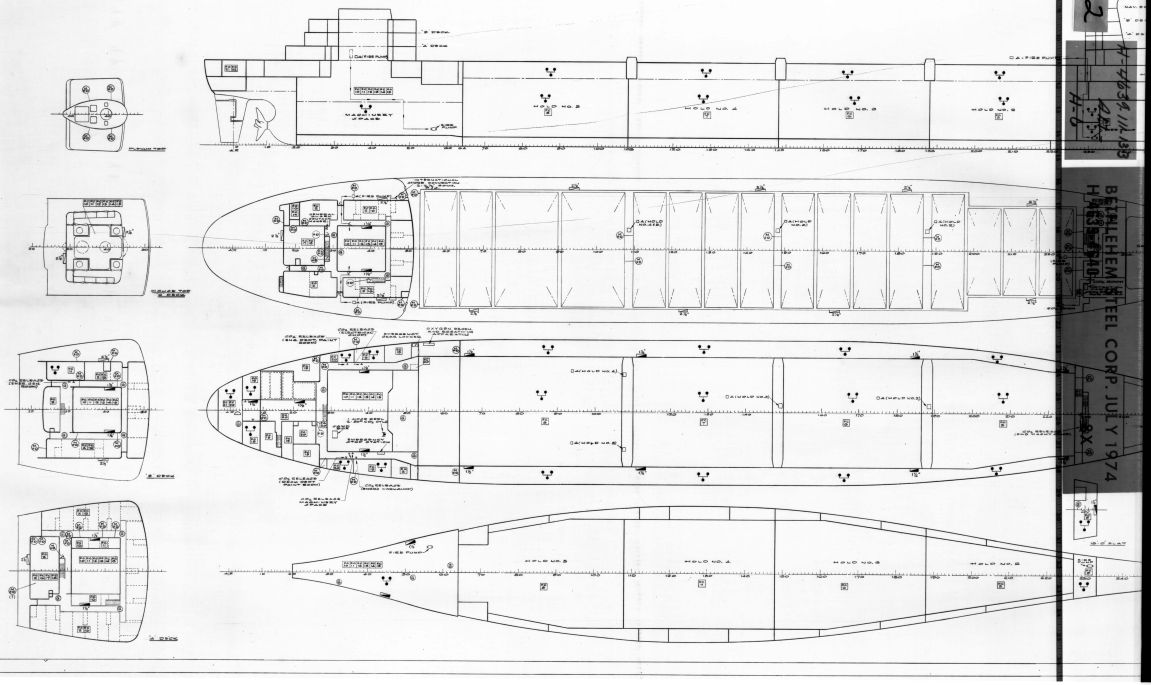
17.0 SQ.FT.

H 4639-111-13-3
FIRE CONTROL PLAN

1

H-4639.111.13.3
Alt. -
H-6

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X


2
H-1031 11.4.38
BETHLEHEM STEEL CORP. JULY 1974
HULL NO. 1
HULL NO. 2
HULL NO. 3
HULL NO. 4
HULL NO. 5
HULL NO. 6
HULL NO. 7
HULL NO. 8
CARGO HOLD NO. 1
CARGO HOLD NO. 2
CARGO HOLD NO. 3
CARGO HOLD NO. 4
CARGO HOLD NO. 5
MACHINERY SPACE
CASTLE DECK
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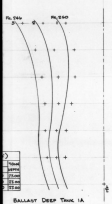
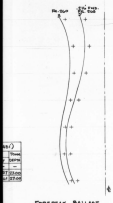
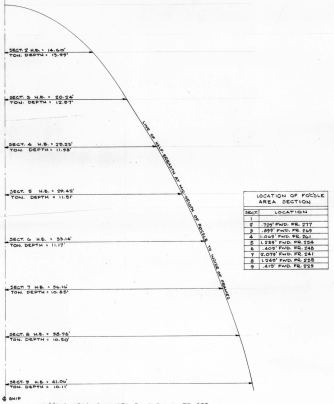






FOCSLE AREA BOUNDED BY SHELL & FR. 229
SCALE- LONGIT = 1"=10', TRANSV = 1"=10'
TONNAGE LENGTH = 130.642' @ 18.850' INTERVALS

LOCATION OF FOCSLE AREA SECTION	
SECT.	LOCATION
1	
2	.729" FWD. FR. 272
3	1.000" FWD. FR. 257
4	.1.000" FWD. FR. 241
5	1.255" FWD. FR. 226
6	.603" FWD. FR. 248
7	12.078" FWD. FR. 241
8	1.289" FWD. FR. 228
9	.410" FWD. FR. 213

NOTE - THIS PLAN IS IN ADDITION TO PLAN H4639-111-13-4, FOR ITEMS NOT SHOWN SEE PLAN H4639-111-13-4.

TONNAGE PLAN

SCALE- AS NOTED DATE- 10-15-73

H4639-111-13-4

BETHLEHEM STEEL CORP.
CENTRAL TECHNICAL DIVISION
SPARROWS POINT, MARYLAND

H-7

1

H 4639 III-13-4 ALT. - H-7

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

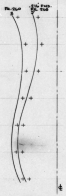
2

H-4639-111-134
ALT-
H-7

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

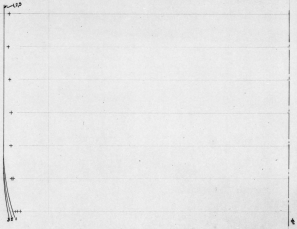
DEEP TANK 1A (L = 56.00')							
	HALF-BREADTHS AT DESIGNATED						TONS
DEPTH	1	2	3	4	5	6	7	DEPTH
1	16.75	16.84	16.78	16.85	16.77	16.87	0	21.00
2	24.04	24.20	24.15	24.17	24.16	24.16	0	22.00
3	13.41	13.53	13.55	13.59	13.72	14.44	0	23.00

BALLAST DEEP TANK 1A
SCALE - 1/4" = 1'-0"



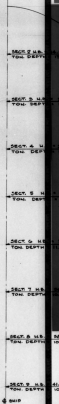
FOREPEAK BALLAST (L = 52.45')								
	HALF-BREADTHS AT DESIGNATED							TONS
DEPTH	1	2	3	4	5	6	7	DEPTH
1	—	—	—	—	—	—	—	—
2	3.15	2.82	3.04	4.27	5.57	5.72	6.37	22.00
3	6.94	7.47	8.47	9.43	10.08	10.24	11.01	23.00

FOREPEAK BALLAST
SCALE - 1/4" = 1'-0"



STABILIZATION TANKS (L = 20.000)								
	HALF-BREADTHS AT DESIGNATED							TONS
DEPTH	1	2	3	4	5	6	7	DEPTH
1	16.00	16.78	16.85	16.85	16.85	16.87	16.87	18.00
2	16.00	16.78	16.85	16.85	16.85	16.87	16.87	19.00
3	16.00	16.78	16.85	16.85	16.85	16.87	16.87	20.00

STABILIZATION TANKS
SCALE - 1/4" = 1'-0"



FIDDLE AREA, BOUNDED
SCALE: - LONGS = 1/8" =
TONNAGE LENGTH = 15

DATE 2/1/73 HULL NO. 4639 NAME S.S. "AUSTRALIA BEAR" PAGE NO. 5 OF 24

INCLINING WEIGHTS

NT	POUNDS TONS	LOCATION
1	9715 4.34	46.50 S
2	19440 8.68	46.51 S
3	10000 4.46	46.21 S
4	8500 3.79	45.85 S
28	12730 5.70	45.23 S
6	8360 3.73	45.37 S
7	9720 4.34	45.46 S
8	8240 3.68	45.29 S
9	9760 4.33	45.50 S
10	13850 6.06	45.58 S
11	13180 5.88	45.04 P
12	13700 6.12	45.50 P
27	13200 5.90	45.51 P
14	13350 6.23	45.17 P
25	8590 3.75	45.07 P
26	13910 6.21	45.19 P
17	8580 3.72	45.00 P
30	11700 5.31	45.01 P
25	11140 4.97	44.98 P
26	11530 5.08	45.17 P

WEIGHT MOVEMENTS

NT	WEIGHT TONS	CENTERS READ AFTER/FORE	DISTANCE FEET	SIDE	MOMENTS FT. TONS	SIDE
4	5.73	90.84	P	339		
7	4.34	90.79	P	394		
8	3.68	90.80	P	333	2007	P
9	4.33	90.64	P	392		
10	6.06	90.75	P	549		
1	4.34	90.64	P	394	(2286)	
27	4.00	91.00	P	364		
3	5.34	90.62	P	484	4295	P
4	3.79	90.78	P	344		
28	5.70	90.89	P	518		
4	3.73	90.58	S	338	(4278)	
4	4.34	90.94	S	395		
8	3.68	90.94	S	335		
9	4.33	90.87	S	393		
10	6.06	90.98	S	550		
1	4.34	91.07	S	395		
27	4.00	90.75	S	545		
3	5.34	90.56	S	484		
4	3.79	90.78	S	344		
28	5.70	90.91	S	518		

INCLINATIONS

	PORTSIDE LEVER INCHES	PORTSIDE DEFLECTION INCHES	TANGENT
1	2.80.00	3.93	P .009729
2	2.348.98	3.38	P .008135
3	2.341.00	5.15	P .012850
3	1.349.00	7.12	P .017755
3	2.348.98	6.89	P .017204
3	3.341.00	4.52	P .011282
4	1.349.00	0.07	P .000180
4	2.348.98	0.04	S .000107
4	3.341.00	0.08	P .000225
5	1.349.00	3.75	S .010162
5	2.348.98	3.73	S .010288
5	3.341.00	3.50	S .010246
6	1.349.00	7.45	S .020190
6	2.348.98	7.47	S .020238
6	3.341.00	6.85	S .020068

MITSUBISHI STEEL CORPORATION
DIAMOND POINT, MARYLAND
Computed by TLM Checked by JC
STEEL Sheet 1/75

NOTE - NET 11 ZERO POSITIVE

DATE 17 February 1973 HULL NO. 4639 NAME S.S. AUSTRALIA BEAR PAGE NO. 1 OF 24

GENERAL DIMENSIONS

LENGTH OVERALL	720'-10"
LENGTH BETWEEN PERPENDICULARS	677'-0"
BREADTH, MOLDED	90'-0"
DEPTH, MOLDED, TO MAIN DECK AT SIDE	54'-0"
DRAFT, TO BOTTOM OF KEEL	34'-1 1/8"
TOTAL DISPLACEMENT IN S.W. AT ABOVE DRAFT	39,742 Tons

GENERAL INFORMATION

THE S.S. AUSTRALIA BEAR, HULL 4639, WAS INCLINED ON SATURDAY 17 FEBRUARY 1973 BETWEEN 8:30 A.M. and 9:30 P.M. THE VESSEL WAS LOCATED AT THE NORTH SIDE OF NO. 1 PIER, NSW-2E.

AN ITEMIZED ACCOUNTING WAS MADE OF ALL WEIGHTS TO COMPLETE; A SUMMARY OF WEIGHTS INCLUDED IN THIS REPORT, TOGETHER WITH THE CONDITION OF TANKS.

MITSUBISHI STEEL CORPORATION
DIAMOND POINT, MARYLAND
Computed by Checked by
STEEL Sheet 1/75

THE NAMES OF THE PARTICIPATING PERSONNEL ARE AS FOLLOWS:

OWNER REPRESENTATIVE
G. G. SHARP CO.
MR. D. T. MALETT
MR. A. A. HIGGS

U. S. COAST GUARD
COR 3 (ENT)
LT. (JG) R. T. NICHOLS, USCG, IN CHARGE
COR 3 (ENT)
LCDR. R. DAVIES, USCG
COR3 (ENLTD.)
LT. J. R. NORMAN, USCG

U. S. MARITIME ADMINISTRATION
MR. W. E. WALSH
MR. G. L. BROWN

BUILDER
MR. A. L. GIBTLING, IN CHARGE
MR. S. BACH, MOVEMENT OF WEIGHTS
MR. C. P. SCHMIDT, TANK SOUNDINGS
MR. L. TURNER, DURHAM
MR. D. W. HAMMERSLEY, HUNG PENDULUMS

DATE 17 February 1973 HULL NO. 4639 NAME S.S. "AUSTRALIA BEAR" PAGE NO. 6 OF 24

DRAFTS AND DENSITY

The following drafts were observed at the time the condition of the ship was being changed:

Draft Forward at 15' Mark	Port	8'-5½"	
	Stbd.	8'-5-7/8"	
		Mean	8'-5-11/16"
Draft Amidships	Port	13'-4"	
	Stbd.	14'-4"	
		Mean	14'-0"
Draft Aft. at 20' Mark	Port	18'-5½"	
	Stbd.	19'-5½"	
		Mean	19'-0-3/8"

A comparison of the port and starboard midship draft readings indicates a list of about 5'-8" to Stbd.

The specific gravity of the water in which the vessel was floating was determined at the time of reading drafts from samples of water taken at a depth of approximately half the draft at each end of the ship.

The mean specific gravity of these samples, as measured by a hydrometer calibrated to 60°/60° F, was 1.0065.

$\frac{35.7940}{1.0065}$ = 35.7940 Cu. Ft. per Ton

MITSUBISHI STEEL CORPORATION
DIAMOND POINT, MARYLAND
Computed by Checked by

DRAFTS CORRECTED TO F.P., H.B.P. AND A.P.

Forward Mark Aft.of F.P.	2'-10"
	2.83'
After Mark Forward of A.P.	20'-0"
	33.00'
Length Between Draft Marks	642.17'
Length Between Perpendiculars	677'-0"
	677.00'
Trim on Length Between Draft Marks	19'-2-1/16" = 19.234
Trim per foot of Length	0.01588'
Trim on Length between Perpendiculars	10.778'
Observed Mean Draft Forward	8'-5-11/16"
	8.807'
Correction to Forward Draft Readings	+0.045'
Observed Draft Forward Corrected to F.P.	8.762'
Observed Mean Draft Aft.	19'-0-3/8"
	19.031'
Correction to After Draft Reading	+0.030'
Observed Draft Aft Corrected to A.P.	19.545'
Midship Mark Fwd. of H.B.P.	6'-9'
	6.75'
Observed Mean Draft at H.B.P.	14.000'
Correction to Midship Draft Readings	+0.107'
Corrected Mean Draft at H.B.P.	14.107'
Mean of Drafts at F.P. and A.P.	14.153'
Keel Deflection (Sag) at H.B.P.	-0.046'
Molded Draft are 0.096' less than Keel Drafts	
Molded Draft At F.P. = 8.762' - 0.096' =	8.666'
Molded Draft At A.P. = 19.545' - 0.096' =	19.449'
Molded Draft At Mid. O = 19.449' - 0.0192B x $\frac{2}{3}$ x 45.66'	=19.446'
	= 0.032 = 19.414'

H-4639-111-13-5 ALT. - H 4639-4640 BETHLEHEM STEEL CORP. JULY 1974 6X

INCLINING EXPERIMENT

FOR

S/S AUSTRALIA BEAR

BUILDER'S HULL NO. 4639

BETHLEHEM STEEL CORPORATION
CENTRAL TECHNICAL DIVISION
SHIPBUILDING
SPARROWS POINT, MARYLAND

H-4639-111-13-5

APPROVED BY U. S. COAST GUARD
LETTER OF 15 MARCH 1973

H-8

DATE 17 FEB 1973 HULL NO. 4639 NAME SS AUSTRALIA BEAR PAGE NO. 7 OF 26

VERTICAL CENTER OF BUOYANCY "AS INCLINED"

STATION	CORR'D MOLDED DRAFTS	AREA WHEEL READINGS	SM/2	FUNCTION OF AREA	MOMENT WHEEL READINGS	SM/2	FUNCTION OF MOMENT
20 (FP)	8.668	73	1/4	18	27	1/4	7
19½	8.933	108	1	108	48	1	48
19	9.197	143	1/2	72	64	1/2	32
18½	9.462	187	1	187	92	1	92
18	9.727	238	3/4	179	126	3/4	95
17	10.258	375	2	750	213	2	426
16	10.789	549	1	549	337	1	337
15	11.322	747	2	1494	495	2	990
14	11.855	1015	1	1015	695	1	695
13	12.389	1265	2	2530	914	2	1828
12	12.924	1527	1	1527	1152	1	1152
11	13.460	1752	2	3504	1405	2	2810
10	13.997	1899	1	1899	1591	1	1591
9	14.534	1989	2	3978	1702	2	3404
8	15.074	2050	1	2050	1829	1	1829
7	15.613	2014	2	4028	1843	2	3686
6	16.153	1897	1	1897	1780	1	1780
5	16.695	1714	2	3428	1615	2	3230
4	17.237	1391	1	1391	1304	1	1304
3	17.780	972	2	1944	908	2	1816
2	18.323	521	3/4	391	479	3/4	359
1½	18.596	340	1	340	340	1	340
1	18.869	200	1/2	100	210	1/2	105
½	19.141	0	1	0	0	1	0
0	19.414	0	1/4	0	0	1/4	0
				33379			27956

DISTANCE OF C.B. BELOW INCLINED WATERPLANE $= \frac{27956}{33379} \times \frac{2 \times 1/3 \times 33.75 \times .04 \times 64}{2 \times 1/3 \times 33.75 \times .02 \times 16} = 6.70$ FT.

DRAFT AT LONG'L CENTER OF BUOYANCY = 14.58 FT

VERTICAL CENTER OF BUOYANCY ABOVE ℄ 7.88 FT

.02 & .04 INTEGRATOR CONSTANTS
16 & 64 CONSTANTS FOR SCALE OF DRAWING

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
Computed by K Checked by JPB

DATE 17 FEB 1973 HULL NO. 4639 NAME SS AUSTRALIA BEAR PAGE NO. 6 OF 26

MOLDED DISPLACEMENT AND LCB INCLUDING SAG "AS INCLINED"

STATION	MOLDED DRAFTS	* COEFF. FOR HOG CORR'N	HOG CORR'N (−)	CORR'D MLD. DRAFTS	AREA WHEEL READINGS	SM/2	AREA FUNCTION	L	MOMENT FUNCTION
20 (FP)	8.668	0.00	0.000	8.668	73	1/4	18	10	180
19½	8.937	0.10	0.004	8.933	108	1	108	9½	1026
19	9.205	0.19	0.008	9.197	143	1/2	72	9	648
18½	9.474	0.27	0.012	9.462	187	1	187	8½	1590
18	9.743	0.36	0.016	9.727	238	3/4	179	8	1432
17	10.280	0.51	0.022	10.258	375	2	750	7	5250
16	10.817	0.64	0.028	10.789	549	1	549	6	3294
15	11.355	0.75	0.033	11.322	747	2	1494	5	7470
14	11.892	0.84	0.037	11.855	1015	1	1015	4	4060
13	12.429	0.91	0.040	12.389	1265	2	2530	3	7590
12	12.966	0.96	0.042	12.924	1527	1	1527	2	3054
11	13.504	0.99	0.044	13.460	1752	2	3504	1	3504
10	14.041	1.00	0.044	13.997	1899	1	1899	0	39098
9	14.578	0.99	0.044	14.534	1989	2	3978	1	3978
8	15.116	0.96	0.042	15.074	2050	1	2050	2	4100
7	15.653	0.91	0.040	15.613	2014	2	4028	3	12084
6	16.190	0.84	0.037	16.153	1897	1	1897	4	7588
5	16.728	0.75	0.033	16.695	1714	2	3428	5	17140
4	17.265	0.64	0.028	17.237	1391	1	1391	6	8346
3	17.802	0.51	0.022	17.780	972	2	1944	7	13608
2	18.339	0.36	0.016	18.323	521	3/4	391	8	3128
1½	18.608	0.27	0.012	18.596	340	1	340	8½	2890
1	18.877	0.19	0.008	18.869	200	1/2	100	9	900
½	19.145	0.10	0.004	19.141	0	1	0	9½	0
0	19.414	0.00	0.00	19.414	0	1/4	0	10	0
							33379		73762
									34664

STATION SPACING 33.75 FT

MLD. VOL $= 2 \times 2 \times \frac{33.75}{3} \times 33379 \times .02 \times 16 = 480658$ FT^3

MLD. DISPL = 480658 / 35.7940 = 13428 TONS

LCB = 33.75 × 34664 / 33379 = 35.05 FT AFT STA 10

LCB = 34.05 FT AFT ℄

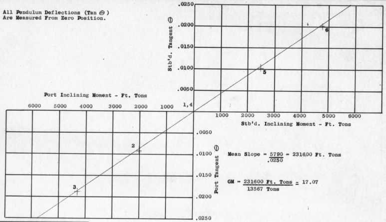
* KEEL DEFLECTION ASSUMED TO BE A PARABOLA THROUGH STA 0, STA 10, AND STA 20
.02 AND 16 ARE INTEGRATOR CONSTANTS

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
Computed by K Checked by JPB

DATE 2/17/73 HULL NO. 4639 NAME S.S. "AUSTRALIA BEAR" PAGE NO. 5 OF 26

PENDULUM DEFLECTIONS AND INCLINING MOMENTS

All Pendulum Deflections (Tan θ) Are Measured From Zero Position.



Mean Slope $= \frac{5790}{.0250} = 231600$ Ft. Tons

GM $= \frac{231600 \text{ Ft. Tons}}{13567 \text{ Tons}} = 17.07$

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
Computed by TLM Checked by K
27145 (Rev.A 1-70)

DATE 2/17/73 HULL NO. 4639 NAME S.S. "Australia Bear" PAGE NO. 4 OF 26

Inclining Weights: Nº	Pounds	Tons	Location		Trial Nº	Weight Movements: Weight Nº	Weight Tons	Distance From Initial Position Feet	Side	Inclining Moment Ft. Tons	Total Inclining Moment Ft. Tons	Side	Inclinations: Points on Plot	Pendulum Length Inches	Pendulum Deflections Inches	Side	Tangent
1	9715	4.34	45.50	S													
27	13440	6.00	45.31	S		11	5.88	90.56	S	532	(2485)						
3	12000	5.36	45.21	S		12	6.12	91.05	S	557							
4	8500	3.79	45.29	S	5	22	5.45	90.58	S	494	2483	S					
28	12700	5.70	45.23	S		14	6.23	90.40	S	563							
6	8360	3.73	45.27	S		23	3.75	90.28	S	339							
7	9720	4.34	45.48	S		26	6.21	90.34	S	561	(2283)						
8	8240	3.68	45.29	S		17	3.72	90.21	S	336							
9	9700	4.33	45.50	S	6	30	5.31	90.11	S	478	4766	S					
10	13550	6.05	45.58	S		25	4.97	90.27	S	449							
11	13180	5.88	45.04	P		20	5.08	90.27	S	459							
12	13700	6.12	45.50	P													
22	12200	5.45	45.31	P													
14	13950	6.23	45.17	P													
23	8390	3.75	45.07	P													
26	13910	6.21	45.19	P													
17	8330	3.72	45.00	P													
30	11900	5.31	45.01	P													
25	11140	4.97	44.98	P													
20	11390	5.08	45.17	P													

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
Computed by TLM Checked by K
27145 (Rev.A 1-70)

H-4639-111.13.5
ALT. -
H.8
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

DATE 2-12-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 11 OF 26

CONDITION	ITEM	WEIGHT TONS	VERTICAL C.G. FEET AB. MLD. BASE	VERTICAL C.G. MOMENTS FT. TONS	LONGITUDINAL C.G. FROM MIDSHIP FEET AFT	AFTER MOMENTS FT. TONS	FEET FORWARD	FORWARD MOMENTS FT. TONS
	MISC. TANKS							
EMPTY	DEEP TANK I.B. F.O. SUMP ℄ 233-234	—						
EMPTY	FWD. MACH. RM. SUMP P/S 227-228	—						
EMPTY	2A F.O. SUMP P/S 204-206	—						
EMPTY	TRANSDUCER COMP. ℄ 188-189	—						
EMPTY	HOLD Nº2 DRAIN WELL P/S 188-189	—						
EMPTY	2B F.O. SUMP P/S 188-190	—						
EMPTY	3A F.O. SUMP P/S 176-178	—						
EMPTY	3B F.O. SUMP P/S 160-162	—						
EMPTY	3C F.O. SUMP P/S 148-149	—						
EMPTY	HOLD Nº3 DRAIN WELL P/S 148-149	—						
EMPTY	4A F.O. SUMP P/S 136-137	—						
EMPTY	4C F.O. SUMP P/S 112-113	—						
EMPTY	HOLD Nº4 DRAIN WELL P/S 108-109	—						
EMPTY	5A F.O. SUMP P/S 88-90	—						
EMPTY	5B F.O. SUMP P/S 72-74	—						
EMPTY	HOLD Nº5 DRAIN WELL P/S 64-65	—						
EMPTY	ENG. RM. DRAIN WELL (P) 63-64	—						
EMPTY	ENG. RM. C.D. ℄ 62-64	—						
EMPTY	ENG. RM. SUMP ℄ 20-22	—						
EMPTY	CHAIN LKR SUMP 260-265	—						
EMPTY	STEERING GEAR VOID 3-G	—						
EMPTY	RUDDER HORN	—						
OPERATING LEVEL	F.W. DRAIN COLL. TANK	—						
OPERATING LEVEL	COND. DRAIN TANK	—						
EMPTY	DIESEL OIL TANK 16-20	—						
EMPTY	KEROSENE TANK 61-63	—						

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MARYLAND
Computed by.............Checked by.............

DATE 2-17-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 10 OF 26

CONDITION	ITEM	WEIGHT TONS	VERTICAL C.G. FEET AB. MLD. BASE	VERTICAL C.G. MOMENTS FT. TONS	LONGITUDINAL C.G. FROM MIDSHIP FEET AFT	AFTER MOMENTS FT. TONS	FEET FORWARD	FORWARD MOMENTS FT. TONS
	WATER BALLAST TANKS							
EMPTY	FORE PEAK ℄ 260-STEM	—						
EMPTY	1A DEEP TANK ℄ 246-260	—						
EMPTY	AFT PEAK ℄ 3-20	—						
EMPTY	UPPER STAB. - PORT 104-112	—						
EMPTY	UPPER STAB. STB'D. 104-112	—						
EMPTY	LOWER STAB. PORT 104-112	—						
EMPTY	LOWER STAB. STB'D. 104-112	—						
EMPTY	4B WING TANK PORT 120-136	—						
EMPTY	4B WING TANK STB'D. 120-136	—						
EMPTY	#1 DBL. BOTTOM ℄ 220-246	—						
EMPTY	#2 DBL. BOTTOM PORT 188-220	—						
EMPTY	#2 DBL. BOTTOM STB'D. 188-220	—						
EMPTY	#3 DBL. BOTTOM ℄ 148-188	—						
EMPTY	#3 DBL. BOTTOM PORT 148-188	—						
EMPTY	#3 DBL. BOTTOM STB'D. 148-188	—						
EMPTY	#4 DBL. BOTTOM ℄ 108-148	—						
EMPTY	#4 DBL. BOTTOM PORT 108-148	—						
EMPTY	#4 DBL. BOTTOM STB'D. 108-148	—						
EMPTY	#5 DBL. BOTTOM ℄ 64-108	—						
EMPTY	#5 DBL. BOTTOM PORT 64-108	—						
EMPTY	#5 DBL. BOTTOM STB'D. 64-108	—						

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MARYLAND
Computed by.............Checked by.............

DATE 2-17-73 HULL NO. 4639 NAME S.S. "AUSTRALIA BEAR" PAGE NO. 9 OF 26

DISPLACEMENT, LCB, VCB, AND KM "AS INCLINED"

ITEM	TONS	VCB	VMOM	Sta. 10 LCB	LMOM
MLD. DISPL. INCL. HOG	13,428	7.88	105,813	35.05A	470,651A
MLD. DISPL. FWD OF STA. 20	8	6.01	48	341.35F	2,731F
SHELL	114	7.88	898	35.05	3,996A
APPENDAGES	17	9.20	156	335.50A	5,704A
TOTAL DISPL. AS INCLINED	13,567	7.88	106,915	35.20A	477,620A
CORR'S TO MIDSHIPS				34.20A	

MOMENT OF INERTIA OF INCLINED WATERPLANE, INCLUDING SHELL = I = 21,156,405 Ft.^{4}

VOLUME OF DISPLACEMENT, "AS INCLINED" = 13,567 x 35.7940 = 485,617 Ft.^{3}

$$BM = \frac{I}{V} = \frac{21,156,405 \text{ Ft.}^4}{485,617 \text{ Ft.}^3} = 43.57 \text{ Ft.}$$

KB = 7.88 Ft.

KM = KB + BM = 7.88 + 43.57 = 51.45 Ft.

$$\text{F.S. CORR'N} = \text{i/s} / \text{Displ.} = \frac{1,382 \text{ TONS}}{13,567 \text{ FT.TONS}} = 0.10 \text{ Ft.}$$

$$\text{AVG. GM} = \frac{231,600 \text{ Ft. Tons}}{13,567 \text{ Tons}} = 17.07 \text{ Ft.}$$

KM = 51.45 Ft.

GM = 17.07 Ft.

KG (UNCRR'D) = 34.38 Ft.

F.S. CORR'N = -0.10 Ft.

KG CORR'D = 34.28 Ft.

LCB AFT. OF MIDSHIPS = 34.20 Ft.

LCG AFT. OF MIDSHIPS = LCB - (BM-GM) x SLOPE OF KEEL

LCG. AFT. OF MIDSHIPS = 34.20 - (43.57 - 17.07) x 0.01592

= 34.20-0.42 = 33.78 Ft.

FREE SURFACE CORRECTION	i	S	i/S
STBD. F.O. SETT.	2518.98	37.5370	67.11
POT. WAT. FWD.	469.08	35.9551	13.05
POT. WAT. AFT.	1869.84	35.9551	52.00
DIST. WAT. FWD.	13286.16	35.9551	369.52
DIST. WAT. AFT.	14060.52	35.9551	391.06
W.T. 3B P	4889.79	35.9551	136.00
W.T. 3B S	4889.79	35.9551	136.00
W.T. 3C P	3905.05	35.9551	108.61
W.T. 3C S	3905.05	35.9551	108.61
TOTAL i/S			1381.96

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
Computed by ENK Checked by WLB

27145 (Rev.A 1-70)

DATE 17 FEB. 1973 HULL NO. 4639 NAME S.S. AUSTRALIA BEAR PAGE NO. 8 OF 26

MOMENT OF INERTIA OF WATERPLANE (INCLUDING SHELL) "AS INCLINED"

STATION	CORR'D MOLDED DRAFTS	MOLDED HALF-BEAM	SHELL THICKNESS FEET	TOTAL HALF-BEAM FEET	$\overline{HB}^3$	SM/2	FUNCTION OF I
20(FP)	8.668	5.554	.083	5.637	179	1/4	45
19½	8.933	6.175	.066	6.241	243	1	243
19	9.197	7.196	.066	7.262	383	1/2	191
18½	9.462	8.592	.066	8.658	649	1	649
18	9.727	10.405	.066	10.471	1148	3/4	861
17	10.258	15.083	.069	15.152	3479	2	6957
16	10.789	20.729	.073	20.802	9002	1	9002
15	11.322	27.215	.073	27.288	20320	2	40640
14	11.855	33.424	.073	33.497	37585	1	37585
13	12.389	39.299	.073	39.372	61033	2	122065
12	12.924	43.612	.073	43.685	83368	1	83368
11	13.460	46.322	.073	46.395	99865	2	199730
10	13.997	47.268	.073	47.341	106099	1	106099
9	14.534	47.468	.073	47.541	107450	2	214899
8	15.074	47.263	.073	47.336	106066	1	106066
7	15.613	45.544	.073	45.617	94925	2	189850
6	16.153	44.072	.073	44.145	86029	1	86029
5	16.695	40.341	.068	40.409	65983	2	131967
4	17.237	34.194	.083	34.277	40272	1	40272
3	17.780	24.971	.057	25.028	15678	2	31355
2	18.323	13.622	.063	13.685	2563	3/4	1922
1½	18.596	8.192	.063	8.255	563	1	563
1	18.869	3.353	.083	3.436	41	1/2	21
½	19.141	0	0	0	0	1	0
0	19.414	0	0	0	0	1/4	0
							1410379

$I = 2/3 \times 2 \times 1/3 \times 33.75' \times 1410379 = 21155685 \text{ FT}^4$

$I_{\text{FWD FR. 20}} = 1/3 \times 2/3 \times 2' \times 1619 = 720 \text{ FT}^4$

TOTAL I = 21156405 FT^4

BETHLEHEM STEEL CORPORATION
SHIPBUILDING
SPARROWS POINT, MARYLAND
Computed by K Checked by JPB

4639-111.13.5 ALT. - H.8
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

H 4639-4640 BETHLEHEM STEEL CORP. JULY 1974 6X

DATE 3-13-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 15 OF 26

DUNNAGE SHEET 2

ITEM	WEIGHT TONS	VERTICAL C.G. ABOVE BASE	VERTICAL C.G. MOMENTS	FREE SURFACE MOMENTS	LONGITUDINAL C.G. FROM MIDSHIP AFT (+)	LONGITUDINAL C.G. FROM MIDSHIP FWD (-)	CHANGES IN TRIM
"DUNNAGE"							
Tool Box, Pipe & Buckets	.1	46.75	5	234.0	22		1
Pipe Cable & Scrap	.1	46.75	5	234.0	22		
Pile Cribbing, wood Dunnage							
Tool Box, 1 Tool Bundle	.3	45.75	14	231.5	66		
Pipe Cables, Bell + Claus	.1	46.75	5	234.0	22		
Tool Box, Hawse + Scrap	.1	45.75	5	229.5	22		
Tool Boxes, Hawse + Scrap	.1	11.75	1	131.5	25		
Chain, Pipe + Scrap	.1	11.75	1	236.5	28		
Tool Box, Hawse + Scrap	.1	11.75	1	168.5	20		
Tool Boxes, Hawse + Scrap	.1	11.75	1	131.5	17		
Tool Boxes, Hawse, Cable + Scrap	.5	29.5	15	391.5	111		
Bucket of Scrap	.2	29.5	6	268.5	59		
Tool Boxes + Scrap	.1	29.5	3	133.5	27		
Hoses, Cable, Lockers + Tool Boxes	.1	29.5	3	133.5	28		
Hawse, Cable + Tool	.1	54.75	5		220.0	22	
Chain, Cable + Tool Boxes	.2	87.43	17		760.0	81	
Manifold, Line + Tool Box	.1	68.24	6		183.5	18	
Welding	.1	67.24	6		173.5	17	
Wire Box, Tool Box + Cable	.1	29.5	11		183.5	17	
Hoses, Cable + Pipe Bit	.1	54.24	5		133.5	12	
Hose, Cable + Pipe Bit	.1	54.24	5		183.5	17	
Cribbing Plate	.7	54.0	35		660	66	
Cutting Rods, Tool Box	.1	54.24	5		81.5	6	
Monitored Box, Hoses + Cable	.1	87.18	6		46.5	5	
Hose, Cable + Fenders	.1	58.48	6	166.5	15		
Hose, Cable + Fire Bit	.1	58.24	6	171.5	17		
Monitored Box, Hose Table	.1	87.18	6	184.5	16		
Fire Hose Box	.2	58.25	11	201.5	44		
Cable Tools, Hose Manifold, Locker	.8	57.05	17	218.0	66		
Misc. Cable + Fenders + Rods	.1	46.93	6	233.5	28		
Fire Cable + Hoses	.1	58.5	6	264.5	28		
Misc. Cable + Hoses	.1	58.98	6	284.5	28		
	5.1		237		2.78		

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHIPBUILDING YARD, SPARROWS POINT, MARYLAND

Prepared by _____ Checked by _____

DATE 3-13-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 16 OF 26

SUMMARY OF TANKS AS INCLUDED

ITEM	WEIGHT TONS	VERTICAL C.G. ABOVE BASE	VERTICAL C.G. MOMENTS	FREE SURFACE MOMENTS	LONGITUDINAL C.G. FROM MIDSHIP AFT (+)	LONGITUDINAL C.G. FROM MIDSHIP FWD (-)	CHANGES IN TRIM
Total Ballast	1144.39	23.19	26589			58.68	64880
Total Fuel Oil	98.67	27.14	2678	174.95	1743.5		
Total Lube Oil	14.35	30.52	438	185.25	642.38		
Total Fresh Water	183.50	31.71	5819	218.86	16750		
Total Loaded As Included	1380.91	23.48	32419			11.88	14958

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHIPBUILDING YARD, SPARROWS POINT, MARYLAND

Prepared by _____ Checked by _____

DATE 3-13-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 17 OF 26

CONDITION	ITEM	WEIGHT TONS	VERTICAL C.G. ABOVE BASE	VERTICAL C.G. MOMENTS	FREE SURFACE MOMENTS	LONGITUDINAL C.G. FROM MIDSHIP AFT (+)	LONGITUDINAL C.G. FROM MIDSHIP FWD (-)	CHANGES IN TRIM
	FRESH & DIST. WATER TANKS							
EMPTY	DBL. BOTTOM PORT 42-05	——						
EMPTY	DBL. BOTTOM STBD. 42-05	——						
EMPTY	DBL. BOTTOM CTR. 42-05	——						
0.3 % (10% PETROCHEM.)	POTABLE - FWD PORT 131-138	16.32	32.13	361.16		326.75	3667.32	
0.3 % (10% PETROCHEM.)	POTABLE - AFT PORT 51-57	36.40	38.13	1165.53	586.50	10458.60		
10.3 % (60% PETROCHEM.)	DISTILLED - FWD 51-57	125.16	34.45	4309.30	582.48	14544.20		
10.3 % (60% PETROCHEM.)	DISTILLED - AFT 50-54	18.65	31.13	579.64	291.34	5434.75		
	TOTAL	153.50	31.71	5916.63	518.04	5930.03		
	LUBRICATING OIL TANKS							
700 GAL - OPER. LEVEL	LUBE OIL SUMP 6 41-49	——						
4'-6 3/4" SOUNDING	LUBE OIL SETTLER. 56-57	9.17	30.79	282.36	183.67	1324.08		
5'-11" SOUNDING	LUBE OIL STORAGE 50-54	5.98	30.04	179.60	231.32	1379.30		
EMPTY	LUBE OIL SERVICE 61-63	——						
EMPTY	LUBE OIL CLD.	——						
4400 GAL - OPER. LEVEL	LUBE OIL GRAVITY	——						
	TOTAL	14.15	30.52	434.94	285.75	4071.98		

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHIPBUILDING YARD, SPARROWS POINT, MARYLAND

Prepared by _____ Checked by _____

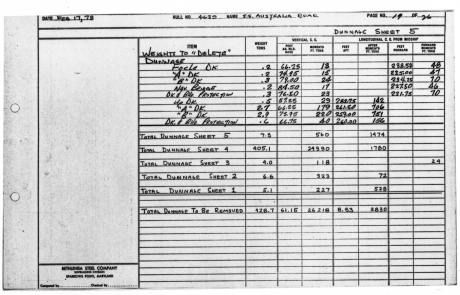
DATE 3-13-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 18 OF 26

CONDITION	ITEM	WEIGHT TONS	VERTICAL C.G. ABOVE BASE	VERTICAL C.G. MOMENTS	FREE SURFACE MOMENTS	LONGITUDINAL C.G. FROM MIDSHIP AFT (+)	LONGITUDINAL C.G. FROM MIDSHIP FWD (-)	CHANGES IN TRIM
	FUEL OIL TANKS							
EMPTY	1B DEEP TANK @ 533-556	——						
EMPTY	1A WING TANK PORT 524-537	——						
EMPTY	1A WING TANK STBD. 524-537	——						
EMPTY	1B WING TANK PORT 185-524	——						
EMPTY	1B WING TANK STBD. 185-524	——						
EMPTY	2A WING TANK PORT 176-185	——						
34'-0" SOUNDING (BALLAST)	2A WING TANK STBD. 160-176	329.39	23.23	7651.73		75.09	13553.31	
30'-08 SOUNDING (BALLAST)	2B WING TANK STBD. 160-176	581.60	21.21	12968.15		72.69	26460.67	
26'-10" SOUNDING (BALLAST)	2C WING TANK STBD. 148-160	295.16	23.30	6850.84		38.31	11314.57	
23'-6 SOUNDING (BALLAST)	3C WING TANK STBD. 148-160	240.98	20.85	4951.72		38.31	9231.18	
EMPTY	4A WING TANK PORT 114-148	——						
EMPTY	4A WING TANK STBD. 114-148	——						
EMPTY	4C WING TANK PORT 111-148	——						
EMPTY	4C WING TANK STBD. 111-150	——						
EMPTY	5A WING TANK PORT 185-204	——						
EMPTY	5A WING TANK STBD. 185-204	——						
EMPTY	5B WING TANK PORT 71-185	——						
EMPTY	5B WING TANK STBD. 71-185	——						
11'-8 1/2"	F.O. SETTLER PORT 64-71	3.50	15.27	53.44	188.25	648.38		
56'-3 1/2" @ 188"	F.O. SETTLER STBD. 64-71	93.17	27.58	2569.79	176.38	16774.69		
	TOTAL FUEL OIL	98.67	27.14	2678.23	176.38	17423.04		
	TOTAL WATER BALLAST	1144.39	23.19	26589.55			86.16	64880.84

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHIPBUILDING YARD, SPARROWS POINT, MARYLAND

Prepared by _____ Checked by _____

H-4639-111-135
ALT. -
H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X
H.S.



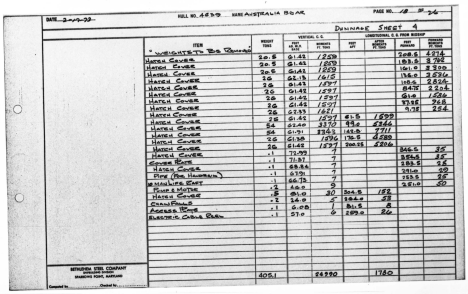
DATE Nov. 17, 75 — HULL NO. 4630 — NAME KS. AUSTRALIA, QUAL. — PAGE NO. 19 OF 36

DUNNAGE SHEET 5

ITEM "WEIGHTS TO BE DELETED" DUNNAGE	WEIGHT TONS	VERTICAL C.G. ARM FT/TONS	VERTICAL C.G. MOMENTS FT/TONS	FORE AND AFT ARM	FORE AND AFT MOMENTS	TRANSVERSE C.G. ARM	TRANSVERSE MOMENTS FT/TONS
Cradle Dk.	.2	46.25	18		2258.9	48	
4th Dk.	.2	29.25	18		2256.6	47	
3rd Dk.	.3	17.40	26		2256.9	40	
Aft Bridge	.2	164.00	17		2257.0	46	
Aft Aft Protection	.3	17.60	23		2257.2	70	
4th Dk.	.5	87.85	29	2257.5	145		
3rd Dk.	8.7	46.55	179	2257.87	726		
2nd Dk.	2.9	29.19	259	2258.0	741		
Aft Aft Protection	.5	61.75	30	2258.0	1286		
Total Dunnage Sheet 5	7.5		540		1674		
Total Dunnage Sheet 4	407.1		24390		1780		
Total Dunnage Sheet 3	4.0		118				24
Total Dunnage Sheet 2	6.6		333		72		
Total Dunnage Sheet 1	2.1		227		228		
Total Dunnage To Be Removed	428.7	61.12	26218	8.93	3830		

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHARPOINT POINT, MARYLAND

Computed by _____ Checked by _____



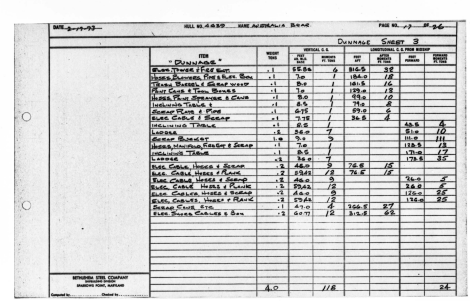
DATE 3-19-73 — HULL NO. 4630 — NAME AUSTRALIA BEAR — PAGE NO. 18 OF 36

DUNNAGE SHEET 4

ITEM "WEIGHTS TO BE DELETED" DUNNAGE	WEIGHT TONS	VERTICAL C.G. ARM FT/TONS	VERTICAL C.G. MOMENTS FT/TONS	FORE AND AFT ARM	FORE AND AFT MOMENTS	TRANSVERSE C.G. ARM	TRANSVERSE MOMENTS FT/TONS
Hatch Cover	20.5	61.45	1259			Port 6	6514
Hatch Coper	20.5	61.45	1259			193.5	3965
Hatch Cover	20.5	61.45	1259			191.0	3916
Hatch Cover	20	62.15	1615			146.0	2836
Hatch Cover	20	61.45	1297			108.5	2554
Hatch Cover	20	61.45	1297			84.5	2326
Hatch Cover	20	61.45	1297			61.0	1220
Hatch Cover	20	61.45	1297			37.5	748
Hatch Cover	20	62.35	1247			9.18	224
Hatch Cover	28	61.45	1297	41.5	1899		
Hatch Cover	24	61.45	1297	83.2	2366		
Hatch Cover	24	61.31	1293	143.5	2711		
Hatch Cover	26	61.45	1296	178.5	4288		
Hatch Cover	26	61.45	1297	208.15	4806		
Hatch Cover	.1	71.99	7			256.5	25
Coper Boom	.1	71.87	7			256.5	25
Hatch Cover	.1	69.24	7			256.5	25
Pipe (for Hardrail)	.1	63.91	7			255.5	25
Windlass Part	.1	66.75	7			221.0	20
Pump & Motor	.2	46.0	9				
Hatch Cover	1.5	61.0	30	204.5	182		
Crane Pedal	.2	34.0	5	184.0	28		
Anchor Bowl	.1	0.00	0	241.5	0		
Electric Cable Reel	.1	57.0	6	229.0	26		
	407.1		26390		1780		

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHARPOINT POINT, MARYLAND

Computed by _____ Checked by _____



DATE 3-19-73 — HULL NO. 4630 — NAME AUSTRALIA BEAR — PAGE NO. 17 OF 36

DUNNAGE SHEET 3

ITEM "DUNNAGE"	WEIGHT TONS	VERTICAL C.G. ARM FT/TONS	VERTICAL C.G. MOMENTS FT/TONS	FORE AND AFT ARM	FORE AND AFT MOMENTS	LONGITUDINAL C.G. FROM MIDSHIP ARM	LONGITUDINAL C.G. FROM MIDSHIP MOMENTS FT/TONS
Bunk Under Fwd Gun	.1	55.84	6	816.5	82		
Hoses Burners, Rod & Belt Gun	.1	70	7	184.0	18		
Tank Barrel & Scaffolding	.1	80	8	181.5	16		
Paint Cans & Tool Boxes	.1	70	7	139.0	13		
Hose Reel Spanner & Cover	.1	90	9	93.0	12		
Insulation Tanks &	.1	85	7	70.0	8		
Scaffold Pipe & Pins	.1	60.5	7	29.0	5		
Elec Cable & Scaffold	.1	73.5	7	36.5	4		
Insulation Tanks	.1	85	7			45.5	4
Ladders	.5	36.0	7			81.0	10
Scaffold Bracket	.1	70	7			181.5	11
Hoses Mooring, Rubber & Scaffold	.1	70	7			178.5	11
Insulation Tanks	.1	85	7			178.5	15
Elec Cable, Hoses & Scaffold	.2	46.0	9	76.5	15		
Elec Cable, Hoses & Scaffold	.2	36.0	12	76.5	15		
Elec Cable, Hoses & Scaffold	.5	18.0	9			96.0	5
Elec Cable, Hoses & Scaffold	.5	24.0	12			24.0	5
Elec Cable, Hoses & Scaffold	.5	18.0	9			120.0	25
Elec Cable, Hoses & Rope	.2	39.0	8			156.0	25
Rope Fwd Gun	.1	47.0	4	256.5	27		
Fire Hoses Cables & Box	.3	20.7	12	315.8	65		
	4.0		118				24

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHARPOINT POINT, MARYLAND

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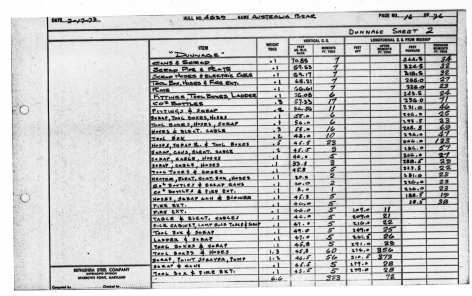

DATE 3-19-73 — HULL NO. 4630 — NAME AUSTRALIA BEAR — PAGE NO. 16 OF 36

DUNNAGE SHEET 2

ITEM "DUNNAGE"	WEIGHT TONS	VERTICAL C.G. ARM FT/TONS	VERTICAL C.G. MOMENTS FT/TONS	FORE AND AFT ARM	FORE AND AFT MOMENTS	LONGITUDINAL C.G. FROM MIDSHIP ARM	LONGITUDINAL C.G. FROM MIDSHIP MOMENTS FT/TONS
Hoses & Scrap	.1	71.00	7			244.5	28
Scrap Pipe & Plate	.1	69.93	7			334.5	28
Scrap Hoses & Electric Cable	.1	69.71	7			348.5	28
Tool Box, Hoses & Pipe Rail	.1	68.31	7			386.0	27
Plate	.1	70.00	7			384.0	23
Portable Tool Boxes Ladder	.1	76.68	6			265.5	24
Coil Shackles	.3	27.33	11			334.9	31
Fittings & Scrap	.2	34.25	11			371.0	46
Scrap, Tool Boxes, Hose	.1	70.00	7			381.5	26
Tool Box, Hoses, Scrap	.1	59.0	6			433.5	31
Hoses & Paint Cable	1.5	43.0	10			428.0	43
Tool Box & Scrap	.2	41.5	23			410.0	133
Hose, Scrap & Tool Boxes	.1	67.5	9			385.0	27
Scrap, Cable, Hoses	.1	66.4	7			365.5	27
Scrap, Boxes, Hoses	.1	59.4	8			388.5	29
Wire Ropes & Hoses	.1	40.8	5			311.5	28
Heaver, Rope, Hose, Box, Hoses	.1	50.0	5			331.0	22
Rope, Bucket & Rope Hoses	.1	50.0	5			330.0	23
Rope & Bucket & Rope Hoses	.1	50.0	5			330.0	23
Hoses, Rope and & Bracket	.1	8.1	1			180.0	19
Hoses, Rope and & Bracket	.1	41.5	5			18.5	38
Pipe Rail	.1	40.0	5				
Pipe Rail	.1	40.0	5	107.0	11		
Table & Bench, Barrels	.1	41.0	5	208.0	22		
Pipe Cradle, Line Rail Tube Fence	.1	41.0	5	230.0	23		
Tool Box & Scrap	.1	49.0	5	281.0	29		
Ladders & Scrap	.1	40.0	5	331.0	26		
Tool Boxes & Scrap	.1	46.8	6	271.0	28		
Tool Boxes & Hoses	1.5	49.8	60	270.0	280		
Scrap, Paint, Spanner, Pump	1.5	49.7	36	319.0	279		
Scrap & Rope	.1	41.5	5	271.0	28		
Tool Box & Time Bkt.	.1	42.5	5	271.0	28		
	6.6		333		72		

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHARPOINT POINT, MARYLAND

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DATE 2-17-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 23 OF 26

ADDITION SHEET 1

ITEM "WEIGHTS TO BE ADDED"	WEIGHT TONS	VERTICAL C.G. FEET AB. MLD. BASE	VERTICAL C.G. MOMENTS FT. TONS	LONGITUDINAL C.G. FROM MIDSHIP FEET AFT	AFTER MOMENTS FT. TONS	FEET FORWARD	FORWARD MOMENTS FT. TONS
HATCH COVER	20.5	61.0	1250			208.5	4274
HATCH COVER	20.5	61.0	1250			183.5	3762
HATCH COVER	20.5	61.0	1250			161.0	3300
HATCH COVER	26	61.0	1586			136.0	3536
HATCH COVER	26	61.0	1586			108.5	2821
HATCH COVER	26	61.0	1586			84.75	2204
HATCH COVER	26	61.0	1586			61.0	1586
HATCH COVER	26	61.0	1586			37.25	968
HATCH COVER	26	61.0	1586			9.75	254
HATCH COVER	26	61.0	1586	61.5	1599		
HATCH COVER	54	61.0	3294	99.0	5346		
HATCH COVER	54	61.0	3294	142.8	7711		
HATCH COVER	26	61.0	1586	176.5	4589		
HATCH COVER	26	61.0	1586	200.25	5206		
HATCH COVER	.1	73.35	7			340.5	34
COVER PLATE	.1	72.75	7			354.5	35
HATCH COVER	.1	70.59	7			281.0	28
PIPE (FOR HANDRAIL)	.1	66.95	7			243.5	24
10 MAN LIFE RAFT, FDN & LADDER	.2	67.52	14			256.0	51
PUMP & MOTOR	.2	53.75	11			276.0	55
HATCH COVER	.5	58.0	29	308.5	154		
ACCESS PLATE	.1	9.0	1	76.5	8		
ELECTRIC CABLE REEL	.1	61.75	6	246.5	25		
CHAIN HOIST	.1	52.25	5	242.75	24		
SPARE PARTS	.2	49.75	10	291.5	58		
CONTAINER BOX (LASHING)	.5	57.25	29			163.5	82
CONTAINER BOX (LASHING)	.3	57.25	17			138.5	42
CONTAINER BOX (LASHING)	.3	57.25	17			8.5	3
CONTAINER BOX (LASHING)	.3	57.25	17	109.0	33		
CONTAINER LASHINGS (STOWAGE)	2.8	68.75	192			263.5	738
CONTAINER LASHINGS (STOWAGE)	2.8	56.25	158			208.5	584
CONTAINER LASHINGS (STOWAGE)	2.8	56.25	158			163.0	456
	415.10		25304				84

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MARYLAND
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DATE 17 FEBRUARY 1973 HULL NO. 4639 NAME SS AUSTRALIA BEAR PAGE NO. 22 OF 26

SUMMARY SHEET - TOTAL WEIGHTS TO BE DEDUCTED

ITEM	WEIGHT TONS	VERTICAL C.G. FEET AB. MLD. BASE	VERTICAL C.G. MOMENTS FT. TONS	LONGITUDINAL C.G. FROM MIDSHIP FEET AFT	AFTER MOMENTS FT. TONS	FEET FORWARD	FORWARD MOMENTS FT. TONS
DEDUCTED							
DUNNAGE	428.70		26,218		3830		
LIQUIDS	1380.71		32,419		–		16,405
INCLINING WEIGHTS	99.70		5,672		9,091		
MEN ON BOARD	3.78		204		284		
TOTAL - WEIGHTS TO BE DEDUCTED	1,912.89	33.73	64,513			1.67	3,200

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MARYLAND
Computed by............ Checked by............

DATE 2-17-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 21 OF 26

ITEM "MEN ON BOARD"	WEIGHT TONS	VERTICAL C.G. FEET AB. MLD. BASE	VERTICAL C.G. MOMENTS FT. TONS	LONGITUDINAL C.G. FROM MIDSHIP FEET AFT	AFTER MOMENTS FT. TONS	FEET FORWARD	FORWARD MOMENTS FT. TONS
COAST GUARD & MARAD (5)							
GEO G SHARP INSP. (1)							
FIREMAN (1)							
POLICE (1)							
ELECTRICIANS (4)							
CARPENTERS (3)							
MACH. (3)							
RIGGERS (12)							
C.T.D. (17)							
47 @ 180# = 8460	3.78	54.00	204	75.00	284		
TOTAL MEN ON BOARD	3.78		204		284		

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MARYLAND
Computed by............ Checked by............

DATE 2-17-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 20 OF 26

ITEM "INCLINING WEIGHTS"	WEIGHT TONS	VERTICAL C.G. FEET AB. MLD. BASE	VERTICAL C.G. MOMENTS FT. TONS	LONGITUDINAL C.G. FROM MIDSHIP FEET AFT	AFTER MOMENTS FT. TONS	FEET FORWARD	FORWARD MOMENTS FT. TONS
#1	4.3	56.33	242			54.5	234
#2	6.0	57.13	343			16.0	96
#3	5.4	56.76	306			3.5	19
#4	3.8	56.76	216	19.0	72		
#5	5.7	56.77	324	25.25	144		
#6	3.7	56.78	210	54.0	200		
#7	4.3	56.34	242	82.75	356		
#8	3.7	56.74	210	87.0	322		
#9	4.3	56.36	242	91.5	393		
#10	6.0	57.29	344	95.5	573		
#11	5.9	57.16	337	101.5	599		
#12	6.1	57.16	349	116.0	708		
#13	5.4	57.43	310	126.0	680		
#14	6.2	56.91	353	130.75	811		
#15	3.7	56.85	210	135.75	502		
#16	6.2	56.86	353	139.0	862		
#17	3.7	56.86	210	146.0	540		
#18	5.3	56.91	302	160.25	849		
#19	4.9	56.92	279	171.5	840		
#20	5.1	56.88	290	194.0	989		
TOTAL INCLINING WTS.	99.7		5672		9091		

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MARYLAND
Computed by............ Checked by............

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DATE 2-17-73 HULL NO. 4639 NAME AUSTRALIA BEAR PAGE NO. 26 OF 36

SHIP IN CONDITION

ITEM	WEIGHT TONS	VERTICAL V.C. FEET ABOVE BASE	VERTICAL V.C. MOMENTS FT. TONS	LONGITUDINAL L.C.G. FROM MIDSHIP FEET AFT	LONGITUDINAL L.C.G. FROM MIDSHIP MOMENTS FT. TONS	FREE SURFACE MOMENTS	CORRECTED MOMENTS FT. TONS
TOTAL COMPL. AS INCLINED	13,367	34.28	465,077	33.78	488,193		
TOTAL WEIGHTS TO BE ADDED	448	50.31	22,564	6.33	2,839		
TOTAL WEIGHTS TO BE DEDUCTED	1,913	33.78	64,626			1.67	3,198
TOTAL	14,118	35.36	498,536	38.33	464,425		

CORRECTION IN OR FOR FREE SURFACE

ITEM	WEIGHT TONS	VERTICAL LEVER ARM	VERTICAL MOMENT FT. TONS	+	−

TOTAL

CORRECTION = Total Fs

Fwd

Aft

KG per corresponding to above displacement in SALT water	15.58	feet
Transverse metacenter above keel less Fss of above draft	33.33	feet
Center of Buoy above keel less Fss	38.36	feet
GM, as corrected for free surface	17.97	feet
GM, corrected for free surface	---	feet
Longitudinal GM = MB = 1700.4 ft sec. = 35.36 ft. =	1871.49	feet
Moment to alter trim 1 inch = 1700.4 ft sec. = 1871.49 ft sec.	4796	feet tons
L.C.B. of ship as trim laid at above mean draft aft/fwd of	0.40 AFT X	feet
Center of Buoy aft/fwd of	38.33	feet
Trimming Lever Arm fwd/aft	31.93	feet
Trim = Total Moment Trimming Lever Arm =	138.6 AFT	inches
Correction to mean draft for trim	-1.58	inches

DRAFTS AROUND KEEL AT PERPENDICULARS

Forward 6' 4.558" inches Midship 12' 4.558" inches Aft 18' 4.558" inches

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHIELDS POINT, MARYLAND

Computed by Checked by

DATE 3-10-73 HULL NO. 4639 NAME S.S. AUSTRALIA BEAR PAGE NO. 25 OF 36

ADDITION SHEET 3

ITEM "WEIGHTS TO BE ADDED"	WEIGHT TONS	VERTICAL V.C. FEET ABOVE BASE	VERTICAL V.C. MOMENTS FT. TONS	LONGITUDINAL L.C.G. FROM MIDSHIP FEET AFT	LONGITUDINAL L.C.G. FROM MIDSHIP MOMENTS FT. TONS	FREE SURFACE MOMENTS	CORRECTED MOMENTS FT. TONS
Containers Loaded (Starb'd)	9.8	66.25	1625			136.80	2261
2.8	66.25	1525			85.68	1956	
2.8	66.88	1525			81.03	1771	
2.8	65.55	1525			86.52	1701	
2.8	64.25	1425			8.40	24	
2.8	62.65	1.9	4.0	39			
2.8	60.35	158	615	178			
2.8	58.55	1.9	1160	311			
2.8	56.25	158	1.52.60	466			
Containers Loaded (Port)	9.8	66.25	1.9	1.93.00	637		
TOTAL ADDITION SHEET 3	20.0		1580		532		
TOTAL ADDITION SHEET 2	30.6		1083		3428		
TOTAL ADDITION SHEET 1	415.1		25344				84
TOTAL ADDITIONS	465.7	60.31	27947	6.33	2936		

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHIELDS POINT, MARYLAND

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DATE FEB. 13, 73 HULL NO. 4639 NAME S.S. AUSTRALIA BEAR PAGE NO. 24 OF 36

ADDITION SHEET 2

ITEM "WEIGHTS TO BE ADDED" FOR DK FURNITURE:	WEIGHT TONS	VERTICAL V.C. FEET ABOVE BASE	VERTICAL V.C. MOMENTS FT. TONS	LONGITUDINAL L.C.G. FROM MIDSHIP FEET AFT	LONGITUDINAL L.C.G. FROM MIDSHIP MOMENTS FT. TONS	FREE SURFACE MOMENTS	CORRECTED MOMENTS FT. TONS
Main Dk.	.2	61.95	16			21.50	46
"A" DK Recreation	.8	67.78	18			23.20	47
"B" DK Furniture:	.9	74.45	17			22.00	44
Fire Equipments Port	.5	66.10	87			21.75	93
Trim Air Hose Table Fwd	.1	66.96	7			22.50	23
Title "D" DK Heritage	.5	54.76	69	146.00	188		
"D" DK Furniture:	2.3	53.15	124	270.39	621		
Galley Equip.	2.2	53.00	190	286.50	917		
"A" DK Title Present	.5	51.40	28	311.45	156		
Life Boat Lashings & Equipment	.2	78.96	16	246.50	49		
"A" DK Title	.1	76.05	7	276.50	28		
"A" DK Furniture	1.7	47.26	128	263.00	692		
"E" DK Furniture	1.6	70.76	113	264.15	423		
Fire Equipments Port	1.0	64.88	64	257.26	257		
"E" DK Title Port	.5	74.75	37	264.00	132	56.00	120
Trim of Fresh Table Port	.03	68.80	2	91.00	78		
Paint	6.8	26.45	178			23.5	104
Mail Bags	.6	85.95	52			217.00	130
	20.6		1083		2478		

BETHLEHEM STEEL COMPANY SHIPBUILDING DIVISION SHIELDS POINT, MARYLAND

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LONG FORE

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1. No Containers or Ballast, 50% Consumables, No Stab. Tanks	49
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TRIM AND STABILITY BOOK
FOR
LONG AND SHORT FORES
OF
SINGLE SCREW CONTAINERSHIP

SEA-LAND PRODUCER - HULL 4640

BETHLEHEM STEEL CORPORATION
CENTRAL TECHNICAL DIVISION
SPARROWS POINT, MARYLAND

APPROVED BY U.S. COAST GUARD LETTERS DATED
25 April 1973 and 15 May 1973

APRIL 1974

TRIM AND STABILITY BOOK
FOR
LONG AND SHORT FORES
OF
SINGLE SCREW CONTAINERSHIP

SEA-LAND CONSUMER - HULL 4639

BETHLEHEM STEEL CORPORATION
CENTRAL TECHNICAL DIVISION
SPARROWS POINT, MARYLAND

APPROVED BY U.S. COAST GUARD LETTERS DATED
25 APRIL 1973 AND 15 MAY 1973

NOVEMBER 1972

HEATING OPERATING INSTRUCTIONS

1. Under normal conditions all valves that could effectively open cross-connections between port and starboard tanks shall be kept closed at sea.

2. Sanity test all tanks considered full are in fact kept with a head in the sounding pipes.

3. Bilges should be pumped out to minimum contents at all times.

4. Tanks required to be ballasted with salt water shall be immediately filled and carried pressed up at all times while such ballast is necessary and when not ballasted such tanks shall be kept pumped to minimum content at all times.

5. During ballasting, a reduction in the vessel's GM due to slack free surface will occur until the tank is pressed up. This temporary loss of stability is equal to the salt water free surface moment of the tank, i.e., divided by the vessel's displacement (in long tons) at that moment.

6. Ballasting the fuel oil settlers, not more than one pair of tanks assigned to each type of consumable liquid on board the vessel shall be slack at one time.

   For the Esso Ship GM in the inert form and for determining the maximum free surface for each type consumable liquid in the Long Form, the following tanks are taken as slack:

   1) Fuel Oil No. 1B Deep Tank €
   2) Fresh Water, Double Bottom, P & S
   3) Potable Water €
   4) Distilled Water, All

INSTRUCTIONS (CONT.)

2. c. (Continued)

   that with the largest free surface value. The following tanks then must be considered slack at all times (see "c" slack"):

   1) Fuel Oil No. 1B Deep Tank €
   2) Fresh Water, Double Bottom P & S
   3) Potable Water, €
   4) Distilled Water, All

   d) All fuel oil tanks excluding those in a. and c. above are considered 98% full and therefore the 98% S ullage free surface correction (see "1"), must be applied.

   These requirements will attain one of the vessel's objectives, namely, to have under-deck cargo tanks loaded to give free surface at any time during, stability due to free surface at any time during the voyage.

3. The Stability and Trim Calculation Form (Page 7B) is used to show the weight, vertical centre of gravity and moment and free surface of fresh water, fuel oil, ballast, fuel oil settlers, diesel oil, ballast, fuel oil, fresh water and container. The sum of the light weights in the vessel's loaded displacement. The total weight of the vessel is found by subtracting the vessel's DWC and the constant amounts by the displacement curves. The mean draft is read from the Hydrostatic Properties (Page 8) together with KM, MT, LCB and LCF and are entered in the appropriate space.

4. In order to determine the stability of the vessel the KM is subtracted from the KG to give the GM measurement for free surface. The free surface moment is found by dividing the sum of the free surface moments by displacement. This value is subtracted from the uncorrected GM to arrive at the corrected available GM. The available corrected GM must be greater than the required GM (Page 9).

5. To determine the draftz forward and aft, the LCB and LCF(1) is found by subtracting the LCB from the LCB. The product of TL and displacement divided by MTC is the local amount of trim (T) in inches. By the use of the LCF(1) the perpendicular position of LCB then trim perpendicular. The change in draft at the F.P. is found by multiplying the total trim by the factor "C". If by by positive, "C" is negative. "C" is found by entering the curve set up to draft forward curves. Special attention is requested to the proper application of the sign (+ or -) to be used in final draft forward and aft.

NOTE ON CONTAINER NUMBERING SYSTEM

On the Container Loading Tables each container position is identified with a five digit number. The first digit gives the hold number. The second digit indicates the tier level. The last two digits give the container location in the tier level numbered from "aft to forward". The letter "R" indicates that the container position is refrigerated. Container numbers for example: Container Number 30628 would be in Hold 3, Column 6, Tier 2 (2nd above deck) on the port side and is refrigerated.

INSTRUCTIONS

OBJECTIVE: The instructions contained herein are intended to aid the operating personnel in using this book and to provide necessary information for maintaining satisfactory stability (corrected GM).

GENERAL NOTES

1. The following densities have been used in the preparation of this book:

Sea Water[2]	35.000 Cu.Ft./L.Ton
Fresh Water	35.000 Cu.Ft./L.Ton
Fuel Oil	37.230 Cu.Ft./L.Ton
Lube Oil	39.272 Cu.Ft./L.Ton
Diesel Oil	36.000 Cu.Ft./L.Ton

2. The cargo loading conditions shown in this book represent a typical full load, half load and ballast voyage each with three (3) different conditions of stores and fuel oil. Page 10 to 81 are based on an average container height of 4'-3". Five additional conditions are included for 4'-0" containers(Pages 49 to 58) and one for all 8'-6" containers. This latter condition is included to solve a particular problem (Pages 10 to 11). These examples are intended to show how the information in this book is utilized in calculating the vessel's GM and Draft.

3. The sample loading conditions in this book are based on average container weights. When calculating the actual loading conditions, the individual container weights should be used.

4. The minimum GM values given on Page 5 shall be adhered to at all times when the vessel is in operation. When a departure condition is calculated or actual condition modified, the corrected GM must be checked to see that sufficient stability is available to meet the required GM at all points in the voyage.

5. In columns 1 and 2 of Held No. 3, the 40' containers on deck may be interchanged with the 20' containers on deck as required. The KG for the 20' containers must then be used. Below deck however, only 40' containers may be stowed. The 40' container can be carried elsewhere on deck in place of two 20'-container in a special pair of 20' hatch covers.

6. The operating draft of salt water in each of the Plane stabilized Tanks corresponding to the vessel's displacement and trim condition must be found. For further information refer to the Plane Stabilization System Operating Instruction Manual. In general, it is the product of displacement times GM (or 100,000 Ft.-Tons for each foot of GM) divided by the Tank Capacity Factor (Page 9) for each tank. Each Plane tank considered in operation at all times, provided the GM meets the stability requirements shown on page 9.

INSTRUCTIONS FOR COMPUTATION OF VESSEL'S STABILITY AND TRIM

1. When calculating stability and trim for any condition of "loaded," detailed weights of the contained cargo are entered on the Container Loading Tables for each column (Pages 10 to 79). The totals for each of these sheets are then entered on the Liquid and Container Loading Summary Table (Page 7A) along with the weights of the vessel's DWT and Ballast.

2. Appropriate free surface corrections must also be entered on Page 7B for each tank containing liquids as follows:

   a. Fuel oil settling tanks are always considered slack and each have "c. slack" from Tank Capacity Table.

   b. All ballast tanks except the upper and lower stabilization tanks shall be pressed up and so each will have zero free surface.

   c. For all other tanks excluding those in a. and b. above, only one tank or pair of tanks assigned to each category of consumable liquid on board shall be slack at any one time. The tank or pair of tanks considered slack in each category shall be

VESSEL CHARACTERISTICS

SHIP TYPE:	SINGLE SCREW CONTAINERSHIP
BUILDER:	BETHLEHEM STEEL CORPORATION, SPARROWS POINT, MARYLAND
BUILDER'S HULL NO.:	6639
NAME:	SEA-LAND CONSUMER SEA-LAND PRODUCER
LENGTH OVERALL	229'-3½"
LENGTH BETWEEN PERPENDICULARS	217'-0"
BREADTH, MOLDED	32'-0"
DEPTH, MOLDED TO UPPER DECK AT SIDE	18'-0"
DRAFT, FULL LOAD, KEEL	12'-6½"/W'
DISPLACEMENT, FULL LOAD KEEL DRAFT	20,710 L.T.S.W.
NUMBER OF CONTAINERS	1178

* LIGHT SHIP CHARACTERISTICS

DISPLACEMENT	17,116 L.T.
VERTICAL CG	25.50 ABOVE BASE
LONGITUDINAL CG	54.23 AFT MIDSHIP
MACHINERY	GEARED TURBINE
DESIGNED SEA SPEED	33.4 KNOTS
SHAFT HORSEPOWER (MAX.)	32,000 SHP
RPM	87 RPM

* OBTAINED FROM THE RESULTS OF AN INCLINING EXPERIMENT FOR THE SEA-LAND CONSUMER (EX. AUSTRALIA BEAR), HULL 6639, ON 17 FEBRUARY 1973.

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BETHLEHEM STEEL CORP. JULY 1974
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BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640

ROUTINE OPERATING INSTRUCTIONS

1. Under normal conditions all valves that could effectively open cross-connections between port and starboard tanks shall be kept closed at sea.

2. Verify that all tanks considered full are in fact kept with a head-to the sounding pipes.

3. Bilges should be pumped out to minimum contents at all times.

4. Tanks required to be ballasted with salt water shall be immediately filled and carried pressed up at all times while such ballast is necessary. Empty or partly filled tanks shall be kept pumped to minimum volume content at all times.

5. During ballasting, a reduction in the vessel's GM due to slack free surfaces will occur until the tank is pressed up. This temporary loss in GM will be equal to the salt water free surface moment of the tank, $i/_v$, divided by the vessel's displacement (a long loss) at that moment.

6. Excluding the fuel oil settlers, not more than one pair of tanks containing the same type of consumable liquid on board the vessel shall be slack at one time.

For the Base Ship GM in the Short Form and for determining the maximum free surface for each type consumable liquid in the Long Form, the following tanks are taken as slack:

1) Fuel Oil No. 1B Deep Tank, ℄
2) Fresh Water, Double Bottom, P & S
3) Potable Water, ℄
4) Distilled Water, Aft

INSTRUCTIONS (CONT.)

2. c. (Continued)

that with the largest free surface value. The following tanks may be considered slack at all times (surface "i/v" slack"):

1) Fuel Oil No. 1B Deep Tank ℄
2) Fresh Water, Double Bottom P & S
3) Potable Water, ℄
4) Distilled Water, Aft

d. All fuel oil tanks excluding those ⓐ a. and c. above are considered full and may take require low (MF) free surface correction

tons $\frac{i_v}{\nabla}$ (MF)

These requirements will allow for of the vessel's tankage in any order desired without undue low free surface at any time during the voyage.

3. Stability and Trim Calculation Form (Page 11) is used to sum the vertical moments, longitudinal moments and free surface of light ship, crew and effects, stores, lube oil, diesel oil, and the sum of the above fuel, fresh water and container displacement. The longitudinal center of gravity (LCG) is obtained by dividing the applied vessel's VCG, TCG and LCG are obtained by dividing the displacement into vertical and longitudinal moments by the displacement. The vessel's trim is read directly from the hydrostatic data. The mean draft is read from the hydrostatic Properties (Page 8) together with KB, MTI, LCB and LCF and are entered in the appropriate space.

4. In order to determine the stability of the vessel the VCG is subtracted from the KB to obtain the GM uncorrected for free surface. The free surface correction is obtained by dividing the sum of i_t's by the displacement in tons. This value is subtracted from the uncorrected GM to arrive at the corrected GM available. The available GM must be greater than the required GM (Page 9).

5. To determine the draths forward and aft, the trim level (TL) is found by subtracting the LCG from the LCF. The product of TL and displacement divided by MTI" is the total amount of trim (T) in inches as measured from the midpoint of the vessel. The LCB then trim by the steps. The change in draft aft (Ta) is by the steps. The change in draft aft (Ta) is found by multiplying the total trim by the factor $\frac{LCB}{LBP}$. If Ta is positive, add to draft forward (increase). Additional add to draft forward (increase). Additional add to Ta. the mean draft, subtract Ta from draft forward and aft. results in the final draft forward and aft.

NOTE ON CONTAINER STOWAGE SYSTEM

On the Container Loading Tables each container position is identified with a five digit number. The first digit gives the hold number. The second digit indicates the container tier in the hold. The third digit in the container number and the two digits give the container position in the tier from inboard to outboard are to starboard). The letter "E" indicates that the space is empty. The letter "R" indicates refrigerated container. For example a container in position 1-2-04 would be in Hold 3, Column 2, Tier 4 (bad above deck), on the port side and is refrigerated.

INSTRUCTIONS

OBJECTIVE: The Instructions contained herein are intended to aid the operating personnel in using this book and to provide necessary information for maintaining satisfactory stability (corrected GM).

GENERAL NOTES

1. The following densities have been used in the preparation of this book:

Sea Water(℄)	35.000 Cu.Ft./L.Ton
Fresh Water	36.000 Cu.Ft./L.Ton
Fuel Oil	37.330 Cu.Ft./L.Ton
Lube Oil	33.600 Cu.Ft./L.Ton
Diesel Oil	40.788 Cu.Ft./L.Ton

2. The cargo loading conditions shown in this book represent a typical full load, half load and ballast condition including full consumables. These conditions (Pages 21 to 48) are based on an average container height at 8'-3". Five additional conditions are included for "6" containers. This (49 to 58) and one for all 8'-6" containers. This (59 to 63) and one for all 8'-6" containers. This (64) condition is used on a sample problem (Pages 15 to 20.) These examples are intended to show how the information in this book is utilized in calculating the vessel's GM and Drafts.

3. The sample loading conditions in this book are based on average container weights. When calculating the actual loading conditions, the individual container weights should be used.

4. The minimum GM values given on Page 9 shall be adhered to at all times when the vessel is in operation. When a departure condition is calculated on which the corrected GM is less than the minimum requirement there will be sufficient ballast capacity available to meet the required GM at all points in the voyage.

5. In columns 1 and 2 of Hold No. 3, the 40' containers are shown as 20' containers. The number of 20' containers if desired. The LCG for the 20' containers must then be used. Below deck however, only 40' containers may be stowed. One 40' container must be carried elsewhere on deck in place of two 20' containers in pierced pairs of 20' hatch covers.

6. The operating depth of salt water in each of the Flume Stabilization Tanks ranges between 6.0' and 11'. Depending on the loading condition the flume stabilizer further information refer to the Flume Stabilization Instruction Book in the vessel. In general, if the product of displacement times GM is 100,000 Ft.-tons or less, the upper flume tank along will provide satisfactory roll reduction. Lower flume tanks should be in operation at all times, provided the GM meets the stability requirements shown on page 9.

INSTRUCTIONS FOR COMPUTATION OF VESSEL'S STABILITY AND TRIM

1. When calculating stability and trim for any condition of loading, the detailed weights of the consumable liquids are entered on the Container Loading Tables for cargo are entered on the Container Loading Tables for each condition. The totals for each of these sheets are then entered on the Liquid and Container Loading Summary Table (Page 70) along with the weights of fuel, fresh water and ballast.

2. Appropriate free surface corrections must also be entered on Page 70 for each tank containing liquids as follows:

   a. Fuel oil settling tanks are always considered to be slack (see "i/ slack" from Tank Capacity Table).

   b. All ballast tanks except the upper and lower stabilization tanks shall be pressed up and as such will have zero free surface.

   c. For all other tanks excluding those in a. and b. above, only one tank or pair of tanks designed to carry the same type of consumable liquid on board shall be slack at any one time. The tank or pair of tanks considered slack in each category shall be

VESSEL CHARACTERISTICS

SHIP-TYPE:	SINGLE SCREW CONTAINERSHIP
BUILDER:	BETHLEHEM STEEL CORPORATION, SPARROWS POINT, MARYLAND
BUILDER'S HULL NO.:	6640
NAME:	SEA-LAND CONSUMER — SEA-LAND PRODUCER

LENGTH OVERALL	720'-55"
LENGTH BETWEEN PERPENDICULARS	651'-0"
BREADTH, MOLDED	90'-0"
DEPTH, MOLDED TO UPPER DECK AT SIDE	54'-11-5/8"
DRAFT, MOLDED, DESIGN	29'-0" L.T.F.W.
DISPLACEMENT, FULL-LOAD SEA DRAFT	1172
NUMBER OF CONTAINERS	

* LIGHT SHIP CHARACTERISTICS

DISPLACEMENT	19118 L.T.
VERTICAL CG	33.26 ABOVE BASE
LONGITUDINAL CG	38.53 AFT MIDSHIP

MACHINERY	GEARED TURBINE
DESIGNED SEA SPEED	21.0 KNOTS
SHAFT HORSEPOWER (MAX.)	32,000 SHP
CREW	47 MEN

* OBTAINED FROM THE RESULTS OF AN INCLINING EXPERIMENT FOR THE SEA-LAND CONSUMER (EX. HASTINGS BEAR), HULL 6639, ON 17 FEBRUARY 1973.

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BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640

ROUTINE OPERATING INSTRUCTIONS

1. Under normal conditions all valves that could effectively connect compartments on opposite port and starboard sides shall be kept closed at sea.

2. Verify that all tanks considered full are in fact kept with a head in the sounding pipes.

3. Bilges should be pumped out to minimum contents at all times.

4. Tanks required to be ballasted with salt water shall be immediately filled and carried pressed up at all times while such ballast is necessary. When not ballasted such tanks shall be kept pumped to minimum content at all times.

5. During ballasting, a reduction in the vessel's GM due to slack free surfaces will occur until the tank is pressed up. This temporary loss in GM (in feet) is equal to the salt water free surface moment of the tank, i', divided by the vessel's displacement (in long tons) at that moment.

6. Including the fuel oil settlers, not more than one pair of tanks assigned to each type of consumable liquid on board the vessel shall be slack at one time.

   For the Base Ship GM in the Short Form and for determining the maximum free surface for each type of consumable liquid in the Long Form, the following tanks are taken as slack:

   1) Fuel Oil No. 1S Deep Tank f
   2) Fresh Water, Double Bottom, P & S
   3) Potable Water, f
   4) Distilled Water, Aft

INSTRUCTIONS (CONT.)

3. c. (Continued)

   that with the largest free surface value. The following items must be considered slack at all times (see "LC slack").

   1) Fuel Oil No. 1S Deep Tank f
   2) Fresh Water, Double Bottom P & S
   3) Potable Water, f
   4) Distilled Water, AFt

   d. All fuel oil tanks excluding those with a, and c, above are considered 98% full and those requiring the 98% to degree level free surface correction (see "i'/∇" 98%).

   These requirements will allow use of the vessel's tankage in any order desired without undetected loss in stability due to free surfaces at any time during the voyage.

3. The Stability and Trim Calculation Form (Page T7) is used to sum the weight, vertical moment, longitudinal moment and free surface of fuel oil, ballast, fuel offsets, stores, lube oil, fresh water, and distilled water to obtain the vessel's displacement. The sum of the above weights is the vessel's loaded displacement. Subtracting the lightship weight and LCG are obtained by subtracting the lightship vertical moment and longitudinal moment by the displacement. The above result is read from the hydrostatic curves (Page 6) together with KM, MT1, LCB and LCF and are entered in the appropriate spaces.

4. In order to determine the stability of the vessel the VCG is extracted from the KM to give the GM uncorrected for free surface. The free surface correction is obtained by dividing the sum of the "i" values of those spaces are then entered on the Liquid and Container Loading Summary Table (Page 76) along with the weights of fuel, fresh water and ballast.

5. To determine the drafts forward and aft, the trim lever arm (MT) is found by subtracting the LCG from the LCB. The product of ∇, and displacement divided by MT1" is the total amount of trim (T) in inches as measured between perpendiculars. If LCG is aft of LCB then trim is by the stern. The change in draft aft (δ_a) is found by multiplying the total trim by the factor $\frac{LBP}{2LBP}$. If δ_a is positive then the draft aft increases. If negative then it is draft forward increases. The algebraic sum of the mean draft, with proper allowance for trim, results in the final drafts forward and aft.

INSTRUCTIONS

OBJECTIVE: The instructions contained herein are intended to aid the operating personnel in using this book and to provide necessary information for maintaining satisfactory stability (corrected GM).

GENERAL NOTES

1. The following densities have been used in the preparation of this book:-

Sea Water(S)	35.000 Cu.Ft./L.Ton
Fresh Water	35.840 Cu.Ft./L.Ton
Fuel Oil	37.220 Cu.Ft./L.Ton
Lube Oil	40.277 Cu.Ft./L.Ton
Diesel Oil	40.746 Cu.Ft./L.Ton

2. The cargo loading conditions shown in this book represent a typical full load, half load and ballast voyage each with 100%, 50% and 10% consumables. These conditions (Pages 40 to 45) are based on average containerized cargo of 8'-6" . Five additional conditions are included for 8'-2" containers(Pages 49 to 58) and one for all 8'-0" containers. This 8'-0" container condition is used as a sample problem in Section 3 of this book. Information is provided so that the information in this book is utilized in calculating the vessel's GM and Drafts.

3. The sample loading conditions in this book are based on the assumption that the vessel will operate in the actual loading conditions. The individual container weights should be used.

4. The minimum GM values given on Page 3 shall be maintained at all times while the vessel is in operation. When a departure condition is calculated an arrival condition must also be calculated to insure that the vessel will not arrive at any point in the voyage with less than the required GM at all points in the voyage.

5. In columns 1 and 2 of Hold No. 5, the 8'0" containers on deck may be replaced by an equal number of 20' containers if desired. In Hold No. 3, the 8'0" containers must then be stowed. One 40' container can be carried elsewhere on deck in place of two 20' containers in ajacent pairs of 20' hatch covers.

6. The operating depth of salt water in each of the Flume Stabilization Tanks ranges between 8.0' and 11.0' depending on the displacement of the vessel. A table of further information refer to the Flume Stabilization System Operating Instruction Manual. In general, if the product of displacement times GM is 100,000 ft.-tons or less, the upper flume tank alone will provide satisfactory stabilization. Otherwise both flume tanks should be in operation at all times, provided the GM meets the stability requirements shown on page 7.

INSTRUCTIONS FOR COMPUTATION OF VESSEL'S STABILITY AND TRIM

1. When calculating stability and trim for any condition of loading, the detailed weights of the container cargo are entered on the Container Loading Tables for the Container Spaces. The free surface moments of those spaces are then entered on the Liquid and Container Loading Summary Table (Page 76) along with the weights of fuel, fresh water and ballast.

2. Appropriate free surface corrections must also be entered on Page 76 for each tank contained in Table as follows:-

   a. Fuel oil settling tanks are always considered to be slack (use "i'/ slack" from Tank Capacity Table).

   b. All ballast tanks except the upper and lower stabilization tanks shall be pressed up and as such will have zero free surface.

   c. For all other tanks excluding those in a, and b, above, only one tank or pair of tanks assigned to each category of consumable liquid on board shall be slack at any one time. The tank or pair of tanks considered slack in each category shall be

VESSEL CHARACTERISTICS

SHIP TYPE: - SINGLE SCREW CONTAINERSHIP
BUILDERS:- BETHLEHEM STEEL CORPORATION, SPARROWS POINT, MARYLAND
HULL NO.: 4640
BUILDER'S HULL NO.: 4639
NAME: SEA-LAND CONSUMER, SEA-LAND PRODUCER

LENGTH OVERALL	722'-0"
LENGTH BETWEEN PERPENDICULARS	682'-0"
BREADTH, MOLDED	95'-0"
DEPTH, MOLDED TO UPPER DECK AT SIDE	54'-0"
DRAFT, FULL LOAD, SSDL	34'-1-7/8"
DISPLACEMENT, FULL LOAD SSDL DRAFT	39740 L.T.S.W.
NUMBER OF CONTAINERS	1772

LIGHT SHIP CHARACTERISTICS

DISPLACEMENT	18134 L.T.
VERTICAL CG	33.36 ABOVE BASE
LONGITUDINAL CG	38.58 AFT MIDSHIP

MACHINERY	GEARED TURBINE
SERVICE SEA SPEED	23.5 KNOTS
SHAFT HORSEPOWER (MAX.)	32,000 SHP
CREW	47 MEN

* OBTAINED FROM THE RESULTS OF AN INCLINING EXPERIMENT FOR THE SEA-LAND CONSUMER (EX. AUSTRALIA BEAR), HULL 4639, ON 17THFEBRUARY 1973.

STABILIZATION TANK OPERATING LEVELS, VCG'S AND FREE SURFACE CORRECTIONS

LIQUID LEVEL IN TANK	TONS SALT WATER		VCG FEET		f.s. *	
FEET	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
6.0	184	136	30.93	15.06	21338.0	18985.9
7.0	183	169	30.53	15.56	21338.4	18985.9
9.0	210	206	31.33	16.52	21338.4	18985.9
11.0	246	232	32.50	17.56	21338.4	18985.9
FULL	416	243	30.96	15.56	0	0

* Value obtained from Table 5 of OPERATING INSTRUCTIONS for the FLUME STABILIZATION SYSTEM by multiplying the "Corr.(feet)" by the displacement

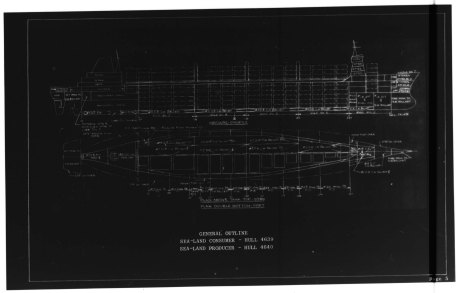
Page 7a

TANK CAPACITIES AND FREE SURFACE DATA

Page 7

HYDROSTATIC PROPERTIES OF SHIP

Page 8



GENERAL OUTLINE
SEA-LAND CONSORTM - HULL 4639
SEA-LAND PRODUCER - HULL 4640

Page 5

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H 4639-4640
6X

STABILIZATION TANK OPERATING LEVELS, VCG'S AND FREE SURFACE CORRECTIONS

LIQUID LEVEL IN TANK	TONS SALT WATER		VCG FEET		I/ρ *	
FEET	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
6.0	169	136	30.03	19.06	21338.0	18945.0
7.0	183	150	30.53	19.06	21338.0	18945.0
9.0	219	206	31.53	18.57	21338.0	18945.0
11.0	256	252	32.53	17.58	21338.0	18945.0
FULL	416	343	36.00	19.56	0	0

* Values obtained from Table A of OPERATING INSTRUCTIONS for the PASSIVE STABILIZATION SYSTEM by multiplying the "Corr.(Part)" by the displacement.

Page 7a

TANK CAPACITIES AND FREE SURFACE DATA

BALLAST TANKS

Tank	Frames	Capacity Tons	VCG	I/ρ Stbd.	I/ρ P&S	LCG
DOUBLE BOTTOM						
No. 1 B.B. C.	10-16	1849	1.00	1906.0	3812.0	1180.00
No. 1 B.B. S.	10-16	1849	1.00	1906.0		1180.00
No. 2 B.B. C.	16-22	2355	1.00	2427.0	4854.0	1120.00
No. 2 B.B. S.	16-22	2355	1.00	2427.0		1120.00
No. 3 B.B. C.	22-28	2355	1.00	2427.0	4854.0	1060.00
No. 3 B.B. S.	22-28	2355	1.00	2427.0		1060.00
No. 4 B.B. C.	28-34	2355	1.00	2427.0	4854.0	1000.00
No. 4 B.B. S.	28-34	2355	1.00	2427.0		1000.00
No. 5 B.B. C.	34-40	2355	1.00	2427.0	4854.0	940.00
No. 5 B.B. S.	34-40	2355	1.00	2427.0		940.00
No. 6 B.B. C.	40-46	2355	1.00	2427.0	4854.0	880.00
No. 6 B.B. S.	40-46	2355	1.00	2427.0		880.00
Peak B.B. F.	46-48	1015	1.00	1046.0	2092.0	830.00
Peak B.B. A.	10-12	1015	1.00	1046.0	2092.0	1230.00
F.P. B.B.	0-10	1015	1.00	1046.0	2092.0	1280.00
A.P. B.B.	48-50	1015	1.00	1046.0	2092.0	780.00
F.P. to 50% FULL Stbd. or P&S						
A.P. to 50% FULL Stbd. or P&S						

Capacity Tons VCG I/ρ Stbd. I/ρ P&S LCG

FUEL OIL TONS

Tank	Frames	Capacity Tons	VCG	I/ρ Stbd.	I/ρ P&S	LCG
No. 1 F.	34-40	1431	24.00	3744.0	7488.0	940.00
No. 2 Wing C.	40-46	1431	24.00	3744.0	7488.0	880.00
No. 2 Wing S.	40-46	1431	24.00	3744.0		880.00
No. 3 Wing C.	46-48	1431	24.00	3744.0	7488.0	830.00
No. 3 Wing S.	46-48	1431	24.00	3744.0		830.00
No. 4 Wing C.	10-12	1431	24.00	3744.0	7488.0	1230.00
No. 4 Wing S.	10-12	1431	24.00	3744.0		1230.00
No. 5 Wing C.	12-16	1431	24.00	3744.0	7488.0	1180.00
No. 5 Wing S.	12-16	1431	24.00	3744.0		1180.00
A.P. Wing C.	48-50	1431	24.00	3744.0	7488.0	780.00
A.P. Wing S.	48-50	1431	24.00	3744.0		780.00

Capacity Tons VCG I/ρ Stbd. I/ρ P&S LCG

FRESH WATER TANKS

Tank	Frames	Capacity Tons	VCG	I/ρ Stbd.	I/ρ P&S	LCG
F.P. D.B.	0-10	1105	1.00	1138.0	2276.0	1280.00
A.P. D.B.	48-50	1105	1.00	1138.0	2276.0	780.00
Peak Tank F.	46-48	1015	1.00	1046.0	2092.0	830.00
Peak Tank A.	10-12	1015	1.00	1046.0	2092.0	1230.00
FULL Tanks Add		2120		2184.0	4368.0	1055.00

MISCELLANEOUS TANKS

Tank	Frames	Capacity Tons	VCG	I/ρ Stbd.	I/ρ P&S	LCG
Sewage	12-16	100	36.00	103.0	206.0	1180.00
Oily Bilge	12-16	100	1.00	103.0	206.0	1180.00
Oily Bilge	16-22	100	1.00	103.0	206.0	1120.00

* Displacement 50 to operating level.

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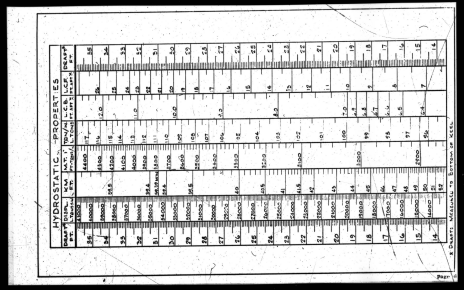
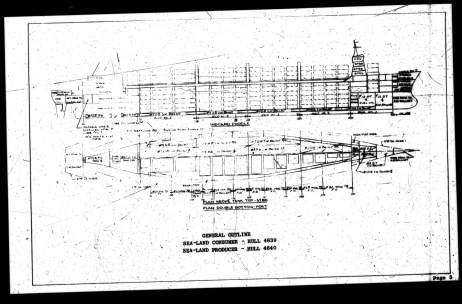


Page 8



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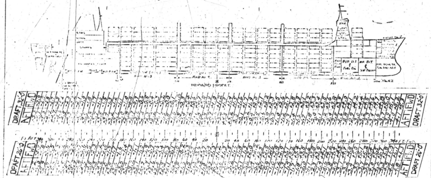
TRIM TABLE

Table of Corrections in Inches to Draft Forward and Aft for each 100 Tons Loaded at any Distance from ⊕

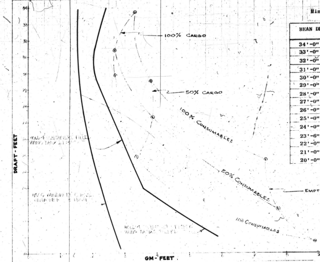


Example: Find the change in trim after loading 100 tons in #1 Hold (270 Ft. Fwd. ⊕)

	Forward		Aft
Initial Draft;	32'-3"	Aft	32'-10"
Correction;	+4.4		-3.0
New Draft;	32'-7"	Aft	32'-7"

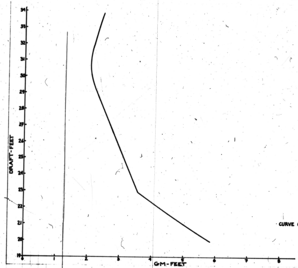
NOTES: 1. The corrections have been computed for the two drafts 6 feet apart to facilitate interpolation but in practice it will be accurate enough to refer to the table nearest the ship's draft.

2. When discharging use the table as when loading but exchange the plus and minus signs.



Minimum Required GM Data

MEAN DRAFT	REQUIRED GM
34'-0"	2.44
33'-0"	2.60
32'-0"	2.16
31'-0"	2.12
30'-0"	2.11
29'-0"	2.28
28'-0"	2.50
27'-0"	2.72
26'-0"	2.93
25'-0"	3.14
24'-0"	3.39
23'-6"	3.60
22'-0"	4.32
21'-0"	5.08
20'-0"	5.92



CURVE OF REQUIRED GM

CONTAINER INFORMATION

Average Container Weights

Container Type	Wt. of 20' Containers - L.Tons 8'-0"	8'-3"	8'-6"
Mail	7.8	8.0	8.3
Chill	11.6	12.0	12.3
Freeze	13.4	13.8	14.2
General	13.1	13.5	13.9
Grain	18.2	18.8	19.3

1. Weight of empty 20' freeze chill containers is 3.00, 3.09, and 3.19 L.T. for 8'-0", 8'-3", and 8'-6" respectively. For all other 20' containers, empty weights are 2.00, 2.06, and 2.13 L.T.

2. Weight of empty 40' freeze chill containers is 5.00, 5.16, and 5.31 L.T. for 8'-0", 8'-3", and 8'-6" respectively. For all other 40' containers, empty weights are 3.50, 3.61, and 3.72 L.T.

3. The weight of loaded 40' containers is twice that of the corresponding 20' containers but may not exceed a total weight of 30 tons.

Vertical Center of Gravity of Containers

Hold No.	Location in Hold	Tier No.	VCG - Feet 8'-0"	8'-3"	8'-6"
1	Below Dk.	4	37.18	37.31	37.43
	Below Dk.	5	45.18	45.56	45.93
	Below Dk.	6	53.18	53.81	54.43
	Below Dk.	7	61.18	62.06	62.93
	On Deck	8	76.34	77.07	77.19
	On Deck	9	84.94	85.32	85.69
2,3,4, & 5 (Cols. 1,2, & 3 only)	Below Dk.	1	10.20	10.33	10.45
	Below Dk.	2	18.20	18.58	18.95
	Below Dk.	3	26.20	26.83	27.45
	Below Dk.	4	34.20	35.08	35.95
	Below Dk.	5	42.20	43.33	44.45
	Below Dk.	6	50.20	51.58	52.95
	On Deck	7	66.15	66.28	66.40
	On Deck	8	74.15	74.53	74.90
	On Deck	9	82.15	82.78	83.40
5 (Col. 4 only)	Below Dk.	5	45.17	45.30	45.42
	Below Dk.	6	53.17	53.55	53.92
	On Deck	7	66.15	66.28	66.40
	On Deck	8	74.15	74.53	74.90
	On Deck	9	82.15	82.78	83.40

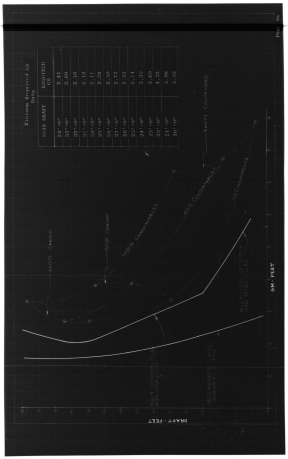
4. 40' deck container locations over Hold No. 5, Cols. 1 and 2, may be occupied by a single 20' container only, while the 40' hold locations are restricted to 40' containers. One 40' container can be carried elsewhere on deck on adjacent pairs of 20' covers, as shown on the container stowage plan.

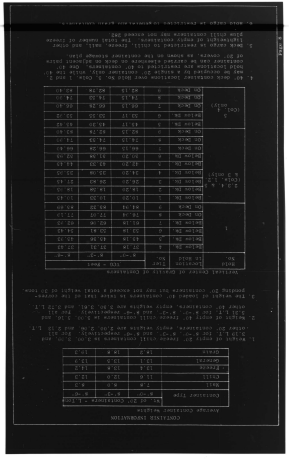
5. Deck cargo is restricted to chill, freeze, mail, and other lightweight of empty containers. The total number of freeze plus chill containers may not exceed 282.

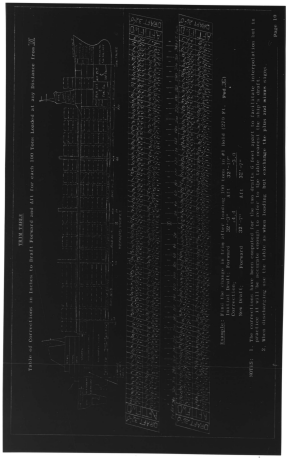
6. Hold cargo is restricted to general and grain containers.

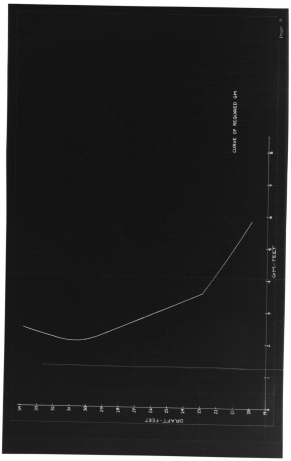
H-4639-4640 Alt-H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



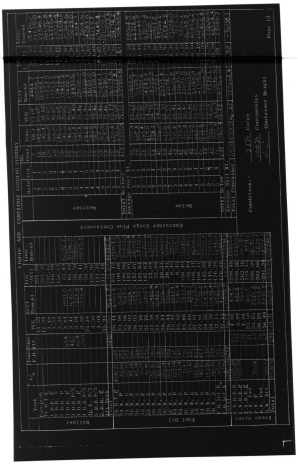


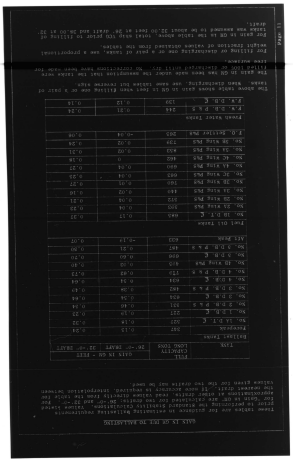


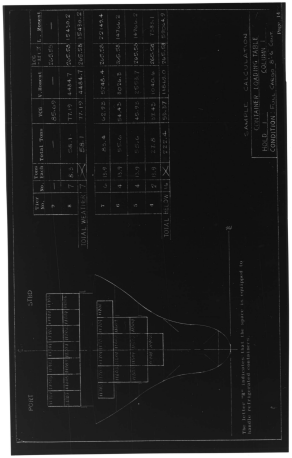


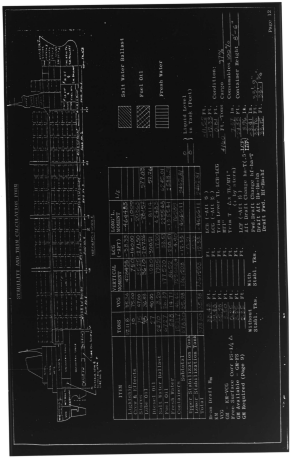
H-4639-111-13-6
Alt-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X









H-6
H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X

PORT STBD

Tier No.	No. Each	Tons Each	Total Tons	VCG	T.Moment	LCG ~411.7	L. Moment
9	—	—	—	85.69	—	2965.5	—
8	7	8.3	58.1	77.19	4484.7	247.58	15450.2
TOTAL WEATHER	7	X	58.1	77.19	4484.7	247.58	15450.2
7	6	13.8	82.4	62.92	5268.4	247.58	22143.4
6	4	13.9	55.6	54.43	3026.5	247.58	14764.2
5	4	13.9	55.6	45.92	2553.7	247.58	14764.2
4	2	13.9	27.8	37.45	1040.9	247.58	7382.1
TOTAL BELOW	14	X	221.4	53.37	11889.0	247.58	58854.9

The letter "R" indicates that the space is equipped to handle refrigerated containers.

SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 1 COLUMN 1
CONDITION Fina Cargo 97 % Corr

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LIQUID AND CONTAINER LOADING SUMMARY

Tank	%	Tons/Cu. Ft. S.W.	Tons	VCG	MOMT Moment	LCG ~411.7	LONG Moment
Forepeak				15.58	391.68		
D.B. WBT C				17.00	1003.00		
D.B. E				3.91	108.98		
D.B. F				3.91	108.98		
D.B. P				3.78	105.42		
D.B. S				3.78	105.42		
D.B. FP				3.49	43.64		
D.B. FS				3.49	43.64		
D.B. AP				3.32	79.68		
D.B. AS				3.32	79.68		
D.B. FOR				20.79	187.11		
D.B. AFT				3.84	107.52		
D.B. E				3.84	107.52		
D.B. F				3.84	107.52		
Total					2966.84		
D.B. WBT C	98%	1.00	98.00	20.79	2037.42	247.58	24262.4
D.B. P	100%	1.00	102.00	20.79	2120.58	247.58	25253.2
D.B. S	100%	1.00	102.00	20.79	2120.58	247.58	25253.2
D.B. E	100%	1.00	107.52	20.79	2235.41	247.58	26622.1
D.B. F	100%	1.00	107.52	20.79	2235.41	247.58	26622.1
D.B. FP	100%	1.00	43.64	20.79	907.23	247.58	10804.2
D.B. FS	100%	1.00	43.64	20.79	907.23	247.58	10804.2
D.B. AP	100%	1.00	79.68	20.79	1656.54	247.58	19726.1
D.B. AS	100%	1.00	79.68	20.79	1656.54	247.58	19726.1
D.B. FOR	100%	1.00	187.11	20.79	3890.00	247.58	46324.2
D.B. AFT	100%	1.00	107.52	20.79	2235.41	247.58	26622.1
D.B. E	100%	1.00	107.52	20.79	2235.41	247.58	26622.1
D.B. F	100%	1.00	107.52	20.79	2235.41	247.58	26622.1
Total			1,354.00		28,144.00		335,154.0
D.B.W.B.T. (S)	100%	0.97	1,313.00	47.00	61,711.00	247.58	325,054.7
D.B.W.B.T. (P)	100%	0.97	1,313.00	47.00	61,711.00	247.58	325,054.7
D.B. Fuel	100%	0.97	1,313.00	47.00	61,711.00	247.58	325,054.7
D.B. Fuel	100%	0.97	1,313.00	47.00	61,711.00	247.58	325,054.7
Total			5,252.00		246,844.00		1,300,218.8

Fresh Water

Tank	%	Tons/Cu. Ft. S.W.	Tons	VCG	MOMT Moment	LCG ~411.7	LONG Moment
D.B.W.B.T. (S)	100%	1.00	1,354.00	47.00	63,638.00	247.58	335,154.0
D.B.W.B.T. (P)	100%	1.00	1,354.00	47.00	63,638.00	247.58	335,154.0
D.B. Fuel	100%	1.00	1,354.00	47.00	63,638.00	247.58	335,154.0
D.B. Fuel	100%	1.00	1,354.00	47.00	63,638.00	247.58	335,154.0
Total			5,416.00		254,552.00		1,340,616.0

Container Corps Plan Containers

	Hatch Col.	Tiers	Tons	VCG	T.C.G. Moment	LCG ~411.7	LONG Moment
Weather	1	1	13	84.5	1098.5	247.58	3218.5
	2	2	26	82.6	2147.6	247.58	6436.1
	3	3	39	80.7	3147.3	247.58	9655.6
	4	4	52	78.8	4097.6	247.58	12874.2
	5	4	52	76.9	3998.8	247.58	12874.2
	6	4	52	74.9	3894.8	247.58	12874.2
	7	4	52	72.9	3790.8	247.58	12874.2
	8	4	52	70.9	3686.8	247.58	12874.2
	9	2	26	68.9	1791.4	247.58	6436.1
Total Weather		31	364		29,653.6		90,116.2
Below Deck	1	1	13	47.0	611.0	247.58	3218.5
	2	2	26	47.0	1222.0	247.58	6436.1
	3	3	39	47.0	1833.0	247.58	9655.6
	4	4	52	47.0	2444.0	247.58	12874.2
	5	4	52	47.0	2444.0	247.58	12874.2
	6	4	52	47.0	2444.0	247.58	12874.2
	7	4	52	47.0	2444.0	247.58	12874.2
	8	4	52	47.0	2444.0	247.58	12874.2
	9	2	26	47.0	1222.0	247.58	6436.1
Total Below		30	364		17,263.0		90,116.2
Total Container		61	728		46,916.6		180,232.4

Condition: 97% Cargo
100.2% Consumables
97.5% Container Weight

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STABILITY AND TRIM CALCULATION FORM

ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L MOMENT	F/S
Lightship	6116	35.24	215495	-3.33	-14498	
Crew & Effects	15	70.00	1050	-140.00	-2100	
Stores	40	57.00	2280	-140.00	-5600	
1250 Oil	50	50.00	2500	-140.00	-7000	
Diesel Oil	0	0.00	0	0.00	0	
Salt Water Ballast	2470	46.39	114583	-10.53	26006.91	
Fuel Oil	1354	47.00	63638	-10.53	14255.82	
Fresh Water	1354	47.00	63638	-10.53	14255.82	
Container Ballast	100	20.00	2000	-5.00	-500.00	
	1454	46.58	67638	-10.53	14255.82	
Upper Stabilization Tank				0.00		
Lower Stabilization Tank				0.00		
Total	11,405	47.44	541,089	-7.08	-80,837	

Salt Water Ballast
Fuel Oil
Fresh Water

Mean Draft, Ma	33'-6"	Ft.	LCB (-AFT B)
VD	35,000	Ft.	LCB (-AFT A)
GM	2.56	Ft.	Trim Lever Tl, LCB-LCG
GM - GM-VCG	2.56	Ft.	MT1"
Free-Surface Corr FS-Ia/D	0.00	Ft.	Trim T (L x Tl/MT1")
GM Available - GM-FS	2.56	Ft.	(Aft if +, Fwd if -)
GM Required (Page 9)	2.56	Ft.	LCF (-AFT B)
			Aft Draft Change to T(-LCF)
	Without	With	Fwd Draft Change bl-ba-T
	Stabil. Tns. -	Stabil. Tns.	Draft Aft Ha-Ba+Ca
			Draft Fwd, Hf-Ba+Cf

-0.05 Ft.
-0.05 Ft.
-0.00 Ft.
Condition:
Cargo 97%
Consumables 100.2%
Container Weight 97.5%
-0.00 In.
0.00 In.
33'-6"
33'-6"

Page 12

ITEM	TONS	LCG (+ AFT)	LONG'L MOMENT	F/S
Ballast Tanks:				
Forepeak	317	0.33	0.24	
No. 1 D.B. C	1,313	-3.33	-4,372.29	
No. 1 D.B. E	227	-3.33	-755.91	
No. 1 D.B. F				
No. 2 D.B. E & F	551	-3.84	-2,116.34	
No. 2 D.B. P & S	1,020	-3.78	-3,855.60	
No. 3 D.B. E & F	687	-4.34	-2,979.38	
No. 3 D.B. P & S	1,020	-4.32	-4,406.40	
No. 4 D.B. E & F	1,313	-5.01	-6,579.13	
No. 4 D.B. P & S	1,020	-5.01	-5,110.20	
No. 5 D.B. E & F	687	-5.01	-3,441.87	
No. 5 D.B. P & S	1,020	-5.01	-5,110.20	
Aft Aft Tanks				
No. 6 D.B. C	663	-5.37	-3,560.31	
No. 6 D.B. E & F	1,313	-5.37	-7,051.81	
No. 6 D.B. P & S	1,020	-5.34	-5,446.80	
No. 7 D.B. E & F	1,313	-5.34	-7,013.42	
No. 7 D.B. P & S	1,020	-5.32	-5,426.40	
No. 8 D.B. E & F	1,313	-5.32	-6,986.16	
No. 8 D.B. P & S	1,020	-5.32	-5,426.40	
No. 9 D.B. E & F	663	-5.32	-3,527.16	
No. 9 D.B. P & S	1,020	-5.32	-5,426.40	
F.P. Ballast Tk.	293	-5.34	-1,564.62	
Fresh Water Tanks				
F.W.B.T. (S)	1354	0.33	0.24	
F.W.B.T. (P)	1354	0.33	0.24	

The above table shows gain or loss when filling one or a pair of tanks, assuming the tanks were empty before filling.

The gain in GM has been under the assumption that the tanks were filled completely or discharged until dry. No corrections have been made for free surface.

For filling or discharging one or pair of tanks, use a proportional part of the above figures for gain or loss.

For gain in GM in the table above, to deal with the effect of filling or discharging to a height less than full, use the same ratio as for draft.

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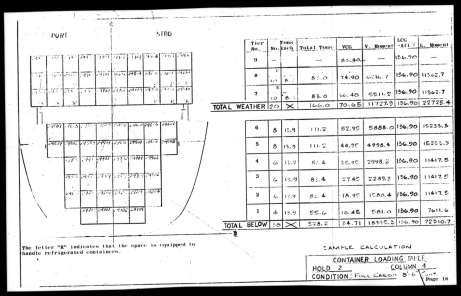
H-4639-11-1-36
Alt-
H 9

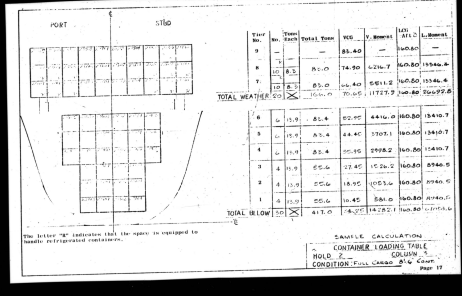
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



Tier No.	Tiers No. Each	Total Tiers	VCG	Y. Moment	LCG 411.0	L. Moment
9	—	—	86.84	—	156.90	—
8	1 / 1 / 1	3.3	74.90	247.1	156.90	11542.7
7	1 / 1 / 1	3.3	74.90	247.1	156.90	11542.7
TOTAL WEATHER	20	166.0	70.68	11729.5	156.90	26055.4
6	5	15.9	111.2	62.95	5088.0	156.90	15235.5
5	5	15.9	111.2	44.39	4958.4	156.90	15235.5
4	5	15.9	81.4	35.45	2998.2	156.90	11417.5
3	4	13.9	81.4	27.45	2288.2	156.90	11417.5
2	4	13.9	81.4	18.95	1580.4	156.90	11417.5
1	4	13.9	55.6	10.45	581.0	156.90	7611.6
TOTAL BELOW	28	528.2	54.71	18315.3	156.90	72540.7

The letter "R" indicates that the space is equipped to handle refrigerated containers.

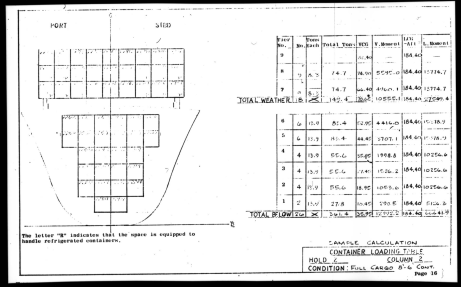
SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 2 COLUMN 4
CONDITION: FULL CARGO 8'6 Cont.
Page 16



Tier No.	Tiers No. Each	Total Tiers	VCG	Y. Moment	LCG 411.0	L. Moment
9	—	—	88.40	—	160.80	—
8	1 / 1 / 1	8.3	74.90	621.7	160.80	13340.4
7	1 / 1 / 1	8.3	85.0	705.5	160.80	13340.4
TOTAL WEATHER	20	166.0	70.68	11729.5	160.80	26695.2
6	5	15.9	85.4	62.95	4416.0	160.80	13410.7
5	5	15.9	85.4	44.40	3707.1	160.80	13410.7
4	5	15.9	85.4	35.45	2998.2	160.80	13410.7
3	4	13.9	55.6	27.45	1526.2	160.80	8940.5
2	4	13.9	55.6	18.95	1053.6	160.80	8940.5
1	4	13.9	55.6	10.45	581.0	160.80	8940.5
TOTAL BELOW	30	417.0	54.76	14282.1	160.80	67045.6

The letter "R" indicates that the space is equipped to handle refrigerated containers.

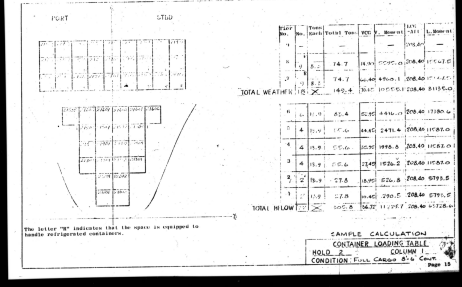
SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 5 COLUMN 4
CONDITION: FULL CARGO 8'6 Cont.
Page 17



Tier No.	Tiers No. Each	Total Tiers	VCG	Y. Moment	LCG 411.0	L. Moment
9	—	—	86.84	—	156.90	—
8	1 / 1 / 1	8.3	74.90	621.7	156.90	13022.7
7	1 / 1 / 1	8.3	85.0	705.5	156.90	13022.7
TOTAL WEATHER	18	149.4	70.68	10558.1	156.90	23445.4
6	5	15.9	111.2	62.95	4416.0	156.90	15235.5
5	5	15.9	111.2	44.39	4958.4	156.90	15235.5
4	5	15.9	81.4	35.45	2998.2	156.90	11417.5
3	4	13.9	81.4	27.45	2288.2	156.90	11417.5
2	4	13.9	81.4	18.95	1580.4	156.90	11417.5
1	4	13.9	55.6	10.45	581.0	156.90	7611.6
TOTAL BELOW	26	492.6	54.71	17082.3	156.90	67720.7

The letter "R" indicates that the space is equipped to handle refrigerated containers.

SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 2 COLUMN 2
CONDITION: FULL CARGO 8'6 Cont.
Page 18



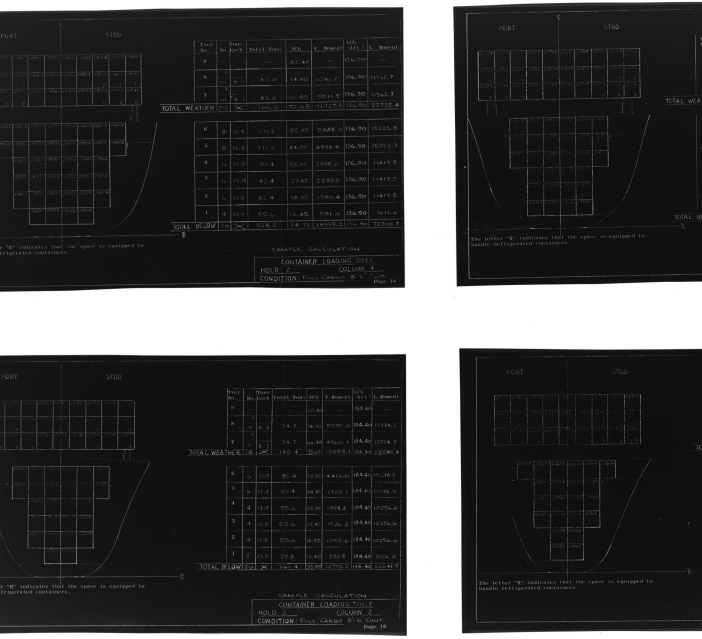
Tier No.	Tiers No. Each	Total Tiers	VCG	Y. Moment	LCG 411.0	L. Moment
9	—	—	88.40	—	160.80	—
8	1 / 1 / 1	8.3	74.90	621.7	160.80	13340.4
7	1 / 1 / 1	8.3	85.0	705.5	160.80	13340.4
TOTAL WEATHER	18	149.4	70.68	10558.1	160.80	24026.8
6	5	15.9	85.4	62.95	4416.0	160.80	13410.7
5	5	15.9	85.4	44.40	3707.1	160.80	13410.7
4	5	15.9	85.4	35.45	2998.2	160.80	13410.7
3	4	13.9	55.6	27.45	1526.2	160.80	8940.5
2	4	13.9	55.6	18.95	1053.6	160.80	8940.5
1	4	13.9	55.6	10.45	581.0	160.80	8940.5
TOTAL BELOW	30	417.0	54.76	14282.1	160.80	67045.6

The letter "R" indicates that the space is equipped to handle refrigerated containers.

SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 2 COLUMN 1
CONDITION: FULL CARGO 8'6 Cont.
Page 19

H-4639.111-136
Alt-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



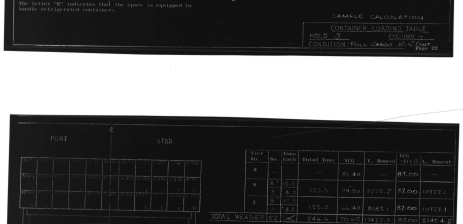
H-4639-III-350
ALT-
H-9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG +Aft	L. Moment
9			—	86.40	—	26.50	—
8	6	12.2	123.3	74.90	9235.2	28.30	4722.4
	3	8.3					
7	5	14.2	118.5	66.40	9186.4	34.70	5564.9
	2	8.3					
TOTAL WEATHER	22	✕	241.8	70.40	18421.6	28.36	10287.0
6	8	13.9	111.2	52.95	5888.0	38.30	4258.9
5	8	13.9	111.2	44.45	4942.8	38.30	4258.9
4	8	13.9	111.2	35.95	3997.6	38.30	4258.9
3	8	13.9	111.2	27.45	3052.4	38.30	4258.9
2	8	13.9	111.2	18.95	2107.2	38.30	4258.9
1	6	13.9	83.4	10.45	871.5	38.30	3193.6
TOTAL BELOW	46	✕	765.8	50.81	23901.5	38.30	27208.0

SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 5 COLUMN 2
CONDITION Full Cargo S.W. Cont.
Page 22

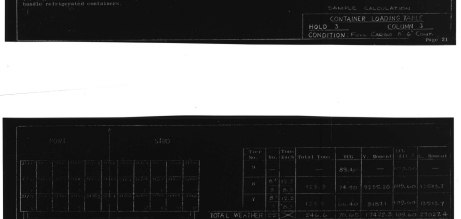
Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG +Aft	L. Moment
9			—	86.40	—	26.50	—
8	6	12.2	123.3	74.90	9235.2	26.90	4722.4
	3	8.3					
7	5	14.2	118.5	66.40	9186.4	34.70	5564.9
	2	8.3					
TOTAL WEATHER	22	✕	241.8	70.40	18421.6	28.36	10287.0
6	8	13.9	111.2	52.95	5888.0	38.30	4258.9
5	8	13.9	111.2	44.45	4942.8	38.30	4258.9
4	8	13.9	111.2	35.95	3997.6	38.30	4258.9
3	8	13.9	111.2	27.45	3052.4	38.30	4258.9
2	8	13.9	111.2	18.95	2107.2	38.30	4258.9
1	6	13.9	83.4	10.45	871.5	38.30	3193.6
TOTAL BELOW	46	✕	765.8	50.81	23901.5	38.30	27208.0

SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 5 COLUMN 3
CONDITION Full Cargo S.W. Cont.
Page 21



Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG +Aft	L. Moment
9			—	87.00	—		
8	6	12.2	123.3	74.90	9235.2	87.00	10727.1
	3	8.3					
7	5	14.2	118.5	66.40	8187.1	87.00	10727.1
	2	8.3					
TOTAL WEATHER	22	✕	241.8	70.40	17422.3	87.00	21454.2
6	8	13.9	111.2	52.95	5888.0	87.00	9674.4
5	8	13.9	111.2	44.45	4942.8	87.00	9674.4
4	8	13.9	111.2	35.95	3997.6	87.00	9674.4
3	8	13.9	111.2	27.45	3052.4	87.00	9674.4
2	6	13.9	83.4	18.95	1580.6	87.00	7255.8
1	6	13.9	83.4	10.45	871.5	87.00	7255.8
TOTAL BELOW	44	✕	651.6	53.71	35013.8	87.00	56709.2

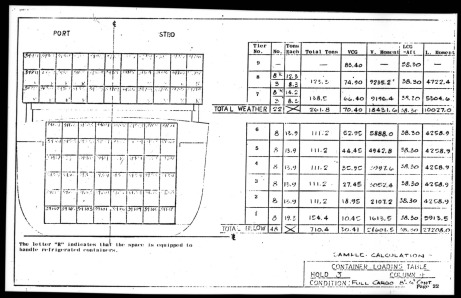
SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 5 COLUMN 2
CONDITION Full Cargo S.W. Cont.
Page 20



Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG +Aft	L. Moment
9			—	86.40	—	87.00	—
8	6	12.2	123.3	74.90	9235.2	87.00	10727.1
	3	8.3					
7	5	14.2	118.5	66.40	8187.1	87.00	10727.1
	2	8.3					
TOTAL WEATHER	22	✕	241.8	70.40	17422.3	87.00	21454.2
6	8	13.9	111.2	52.95	5888.0	87.00	9674.4
5	8	13.9	111.2	44.45	4942.8	87.00	9674.4
4	8	13.9	111.2	35.95	3997.6	87.00	9674.4
3	8	13.9	111.2	27.45	3052.4	87.00	9674.4
2	6	13.9	83.4	18.95	1580.6	87.00	7255.8
1	6	13.9	83.4	10.45	871.5	87.00	7255.8
TOTAL BELOW	44	✕	651.6	53.71	35013.8	87.00	56709.2

SAMPLE CALCULATIONS
CONTAINER LOADING TABLE
HOLD 5 COLUMN 1
CONDITION Full Cargo S.W. Cont.
Page 19

H 4639-4640 BETHLEHEM STEEL CORP. JULY 1974 6X
H 4639-4640 A12-6-9

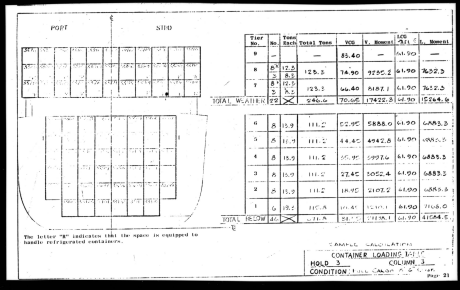


Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG Aft	L. Moment
9	—		—	85.40	—	58.90	—
8	8	15.9	111.2	62.95	5888.0	58.30	4268.9
5	8	15.9	111.2	44.45	4942.8	58.30	4268.9
4	8	15.9	111.2	25.95	2997.6	58.30	4268.9
3	8	15.9	111.2	27.45	3052.4	58.30	4268.9
2	8	15.9	111.2	18.95	2107.2	58.30	4268.9
1	6	19.1	114.4	10.45	1613.5	58.30	5913.5
TOTAL BELOW	48		760.6	30.41	23001.5	58.30	27204.0

Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG Aft	L. Moment
9	—		—	85.40	—	58.90	—
8	8	15.9	111.2	62.95	5888.0	58.30	4268.9
5	8	15.9	111.2	44.45	4942.8	58.30	4268.9
4	8	15.9	111.2	25.95	2997.6	58.30	4268.9
3	8	15.9	111.2	27.45	3052.4	58.30	4268.9
2	8	15.9	111.2	18.95	2107.2	58.30	4268.9
1	6	19.1	114.4	10.45	1613.5	58.30	5913.5
TOTAL BELOW	48		760.6	30.41	23001.5	58.30	27204.0

The letter "R" indicates that the space is equipped to handle refrigerated containers.

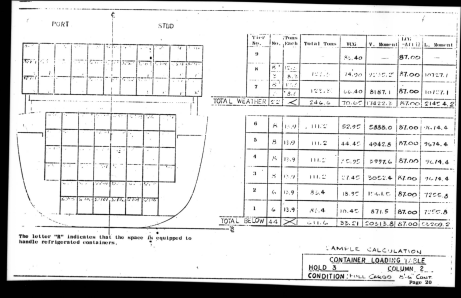
SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 4 COLUMN 2
CONDITION: FULL CARGO ALL CONT
Page 22



Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG Aft	L. Moment
9	—		—	85.40	—	61.90	—
8	8	15.9	111.2	62.95	5888.0	61.90	6883.3
5	8	15.9	111.2	44.45	4942.8	61.90	6883.3
4	8	15.9	111.2	25.95	2997.6	61.90	6883.3
3	8	15.9	111.2	27.45	3052.4	61.90	6883.3
2	8	15.9	111.2	18.95	2107.2	61.90	6883.3
1	6	19.1	114.4	10.45	1613.5	61.90	7168.6
TOTAL BELOW	48		760.6	30.41	23001.5	61.90	41564.5

The letter "R" indicates that the space is equipped to handle refrigerated containers.

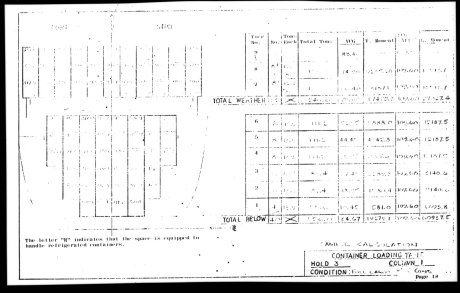
SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 5 COLUMN 3
CONDITION: FULL CARGO ALL CONT
Page 23



Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG Aft	L. Moment
9				85.40		87.00	
8	8	15.9	127.2	62.95	5888.0	87.00	10127.1
7	8	15.9	127.2	44.45	4942.8	87.00	10127.1
6	8	15.9	127.2	25.95	2997.6	87.00	10127.1
TOTAL WEATHER	32		508.8	44.45	19771.2	87.00	40508.4
5	8	15.9	111.2	62.95	5888.0	87.00	9674.4
4	8	15.9	111.2	44.45	4942.8	87.00	9674.4
3	8	15.9	111.2	25.95	2997.6	87.00	9674.4
2	8	15.9	111.2	27.45	3052.4	87.00	9674.4
1	6	19.1	114.4	18.95	2167.2	87.00	9955.8
TOTAL BELOW	44		760.6	33.51	25513.8	87.00	53552.2

The letter "R" indicates that the space is equipped to handle refrigerated containers.

SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 3 COLUMN 2
CONDITION: FULL CARGO ALL CONT
Page 20



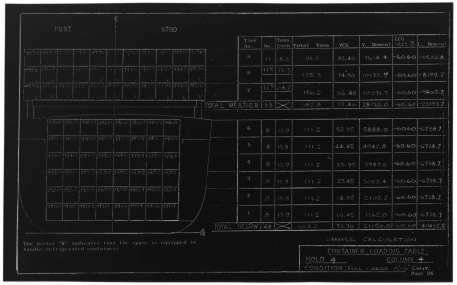
Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG Aft	L. Moment
9				85.40			
8	8	15.9	127.2	62.95	5888.0	87.00	11067.6
7	8	15.9	127.2	44.45	4942.8	87.00	11067.6
6	8	15.9	127.2	25.95	2997.6	87.00	11067.6
TOTAL WEATHER	32		508.8	44.45	19771.2	87.00	44270.4
5	8	15.9	111.2	62.95	5888.0	87.00	10594.4
4	8	15.9	111.2	44.45	4942.8	87.00	10594.4
3	8	15.9	111.2	25.95	2997.6	87.00	10594.4
2	8	15.9	111.2	27.45	3052.4	87.00	10594.4
1	6	19.1	114.4	18.95	2167.2	87.00	10901.8
TOTAL BELOW	44		760.6	33.51	25513.8	87.00	65947.0

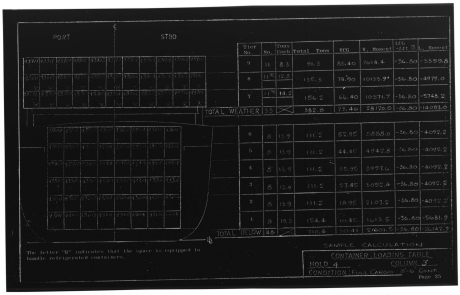
The letter "R" indicates that the space is equipped to handle refrigerated containers.

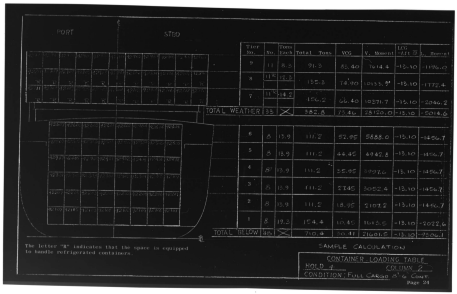
SAMPLE CALCULATION
CONTAINER LOADING TABLE
HOLD 3 COLUMN 1
CONDITION: FULL CARGO ALL CONT
Page 19

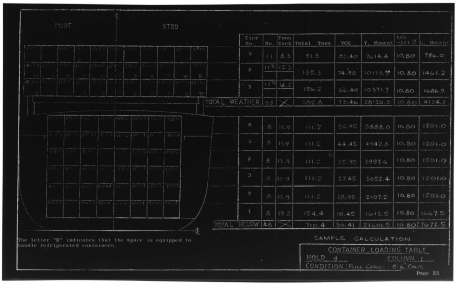
H-4639.111.13-6
Alt.-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

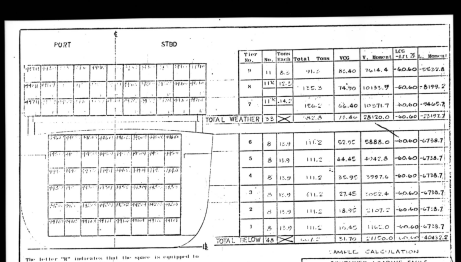


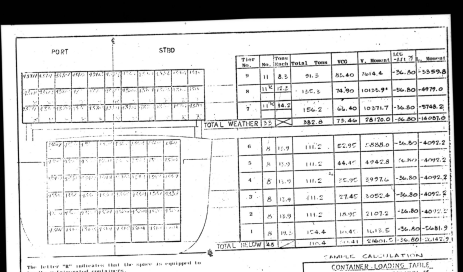


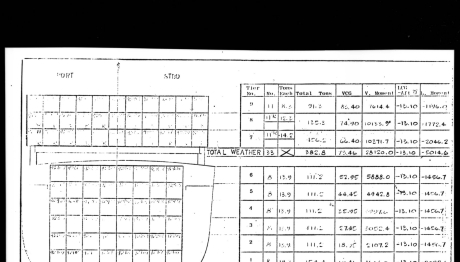


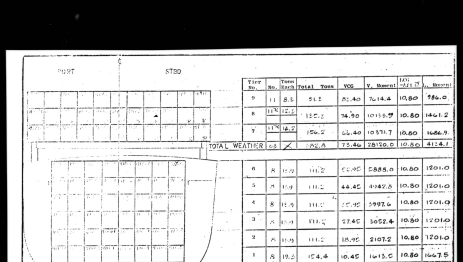


H 4639/III/13-6
Alt-
H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X
H-9

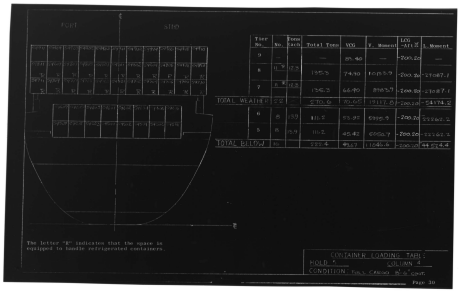




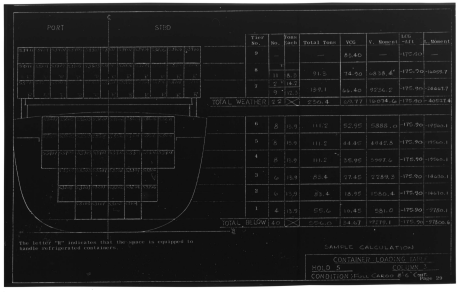




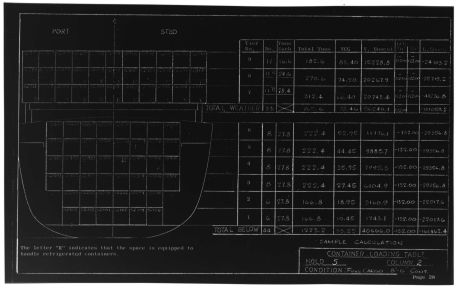
H-9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



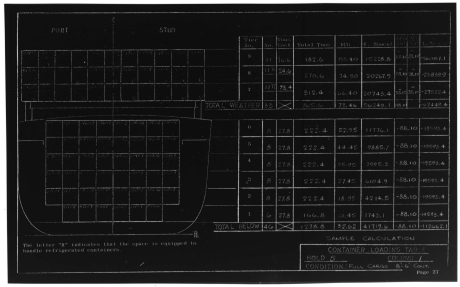
Tier No.	No.	Bays Each	Total Tons	VCG	V. Moment	LCG ~FP	L. Moment
9			—	81.40	—	204.20	—
8		11.5	199.5	74.90	14953.9	204.20	41087.7
7		2 @ 11.5	134.3	66.80	8969.7	204.20	27387.1
TOTAL WEATHER			333.8	70.66	23577.6	204.20	68474.8
6	8	11.5	111.2	59.20	6582.9	204.20	22702.5
5	8	11.5	111.2	45.40	5049.7	204.20	22702.5
TOTAL BELOW	16		222.4	49.87	11088.6	204.20	45405.4



Tier No.	No.	Bays Each	Total Tons	VCG	V. Moment	LCG ~FP	L. Moment
9			—	81.40	—	175.90	—
8	11	11.5	199.5	74.90	14938.4	175.90	35097.7
7	2	11.5	134.3	66.80	8936.2	175.90	23627.7
TOTAL WEATHER	35		333.8	70.66	23577.6	175.90	58725.4
6	8	11.5	111.2	59.20	6582.9	175.90	19560.1
5	8	11.5	111.2	44.40	4940.5	175.90	19560.1
4	8	11.5	111.2	30.95	3442.5	175.90	19560.1
3	6	11.5	83.4	17.45	1455.4	175.90	14670.1
2	6	11.5	83.4	18.95	1580.4	175.90	14670.1
1	6	11.5	83.4	34.40	2869.0	175.90	14670.1
TOTAL BELOW	40		584.0	34.67	20270.7	175.90	102760.6

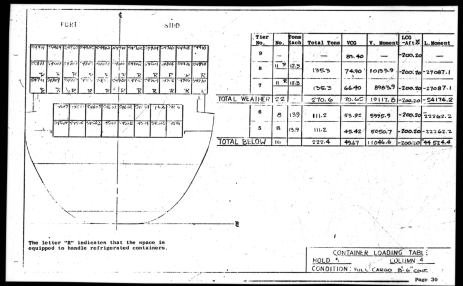


Tier No.	No.	Bays Each	Total Tons	VCG	V. Moment	LCG ~FP	L. Moment
9	11	11.5	182.6	80.40	14678.8	204.20	37285.2
8	11	11.5	170.6	74.90	12823.9	204.20	34836.2
7	11	11.5	312.4	66.40	20747.4	204.20	63796.8
TOTAL WEATHER	33		665.6	70.80	47250.1	204.20	135918.2
6	8	11.5	222.4	60.05	13356.1	183.10	40719.4
5	8	11.5	222.4	44.40	9865.7	183.10	40719.4
4	8	11.5	222.4	30.95	6883.5	183.10	40719.4
3	8	11.5	222.4	17.45	3880.9	183.10	40719.4
2	8	11.5	166.8	18.95	3160.9	183.10	30539.4
1	6	11.5	166.8	34.45	5745.1	183.10	30539.4
TOTAL BELOW	44		1225.2	35.55	43566.0	183.10	224374.8

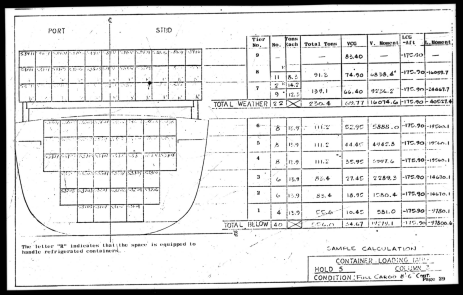


Tier No.	No.	Bays Each	Total Tons	VCG	V. Moment	LCG ~FP	L. Moment
9	11	11.5	182.6	80.40	14678.8	175.90	32120.1
8	11	11.5	170.6	74.90	12823.9	175.90	30010.7
7	11	11.5	312.4	66.40	20747.4	175.90	54956.2
TOTAL WEATHER	33		665.6	70.80	47250.1	175.90	117087.0
6	8	11.5	222.4	60.05	13356.1	158.10	35160.4
5	8	11.5	222.4	44.40	9865.7	158.10	35160.4
4	8	11.5	222.4	30.95	6883.5	158.10	35160.4
3	8	11.5	222.4	17.45	3880.9	158.10	35160.4
2	8	11.5	222.4	18.95	4214.5	158.10	35160.4
1	6	11.5	166.8	34.45	5745.1	158.10	26370.4
TOTAL BELOW	44		1278.8	32.62	41719.8	158.10	202172.0

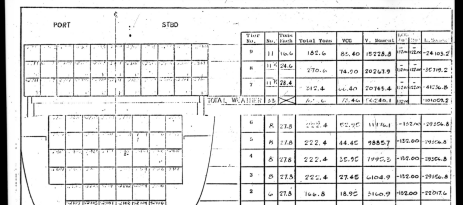
H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X
H-9



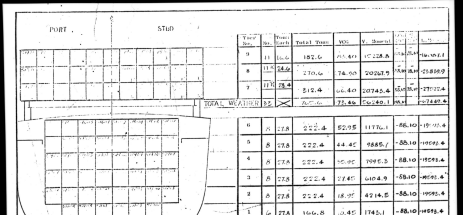
Tier No.	No.	Tons each	Total Tons	VCG	V. Moment	LCG +FE	L. Moment
9	—	—	—	81.40	—	+200.00	—
8	11	82.3	1985.9	74.90	148758.4	+200.00	+397087.1
7	11	82.3	1963.3	66.40	130391.1	+200.00	+392667.3
TOTAL WEATHER	22	—	3749.2	70.40	263949.5	+200.00	+749754.4
6	8	139	1111.2	59.92	59695.9	+200.00	+222362.5
5	8	139	1111.2	48.42	53790.7	+200.00	+222362.5
TOTAL BELOW	16		2222.4	49.67	110486.6	+200.00	+444724.0



Tier No.	No.	Tons each	Total Tons	VCG	V. Moment	LCG +FE	L. Moment
9	—	—	—	85.40	—	+175.00	—
8	11	82.3	1963.3	74.90	147038.4	+175.00	+343657.7
7	11	82.3	1963.3	66.40	130391.1	+175.00	+343667.3
9	11	82.3	1963.3	70.40	138214.2	+175.00	+343667.3
TOTAL WEATHER	22	—	3926.6	70.40	276429.5	+175.00	+687324.6
6	8	139	1111.2	59.92	5888.0	+175.00	+194362.5
5	8	139	1111.2	48.42	6982.8	+175.00	+194362.5
4	8	139	1111.2	36.92	7997.6	+175.00	+194362.5
3	6	139	833.4	27.42	2284.2	+175.00	+145810.1
2	6	139	833.4	18.92	1760.4	+175.00	+145810.1
1	4	139	555.6	10.42	581.0	+175.00	+97206.1
TOTAL BELOW	40		5556.0	34.67	192716.1	+175.00	+972806.6



Tier No.	No.	Tons each	Total Tons	VCG	V. Moment	LCG +FE	L. Moment
9	11	16.6	182.6	85.40	15588.4	+200.00	+36520.0
8	11	26.6	292.6	74.90	21917.1	+200.00	+58520.0
7	11	27.8	305.8	66.40	20305.4	+200.00	+61156.0
TOTAL WEATHER	33	—	781.0	75.46	58960.9	+200.00	+156196.0
6	8	27.8	222.4	59.92	13324.1	+200.00	+44504.0
5	8	27.8	222.4	48.42	9885.7	+200.00	+44504.0
4	8	27.8	222.4	36.92	7995.3	+200.00	+44504.0
3	8	27.8	222.4	27.42	6104.9	+200.00	+44504.0
2	6	27.8	166.8	18.92	3140.9	+200.00	+33367.6
1	6	27.8	166.8	10.42	1745.1	+200.00	+33367.6
TOTAL BELOW	44		1225.2	33.55	40596.0	+200.00	+244667.6



Tier No.	No.	Tons each	Total Tons	VCG	V. Moment	LCG +FE	L. Moment
9	11	16.6	182.6	85.40	15588.4	+175.00	+31955.0
8	11	26.6	292.6	74.90	21917.1	+175.00	+51205.0
7	11	28.4	312.4	66.40	20745.4	+175.00	+54670.0
TOTAL WEATHER	33	—	787.6	75.86	59750.9	+175.00	+137830.0
6	8	27.8	222.4	59.92	13324.1	+175.00	+38920.0
5	8	27.8	222.4	48.42	9885.7	+175.00	+38920.0
4	8	27.8	222.4	36.92	7995.3	+175.00	+38920.0
3	8	27.8	222.4	27.42	6104.9	+175.00	+38920.0
2	8	27.8	222.4	18.92	4214.5	+175.00	+38920.0
1	6	27.8	166.8	10.45	1743.1	+175.00	+29190.0
TOTAL BELOW	46		1278.8	52.02	41719.9	+175.00	+223660.0

Alt.-
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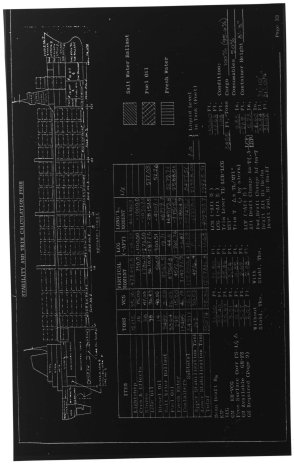
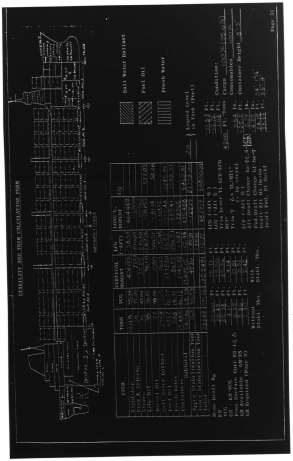
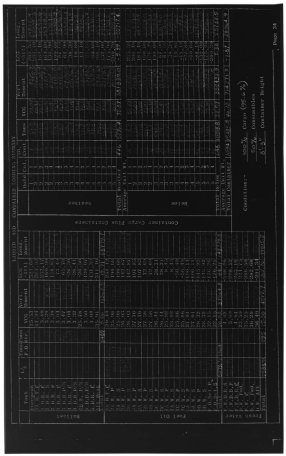
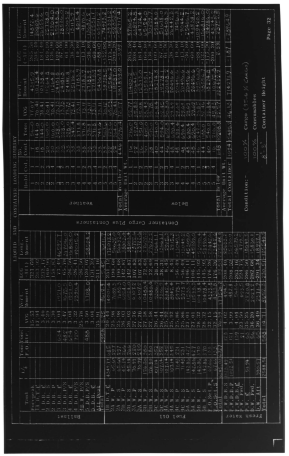
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 6X









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H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

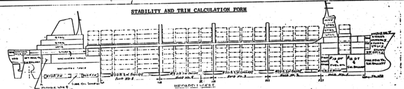
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	1/s	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.℄				17.94		283.92	
	1 D.B. ℄				3.40		232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ℄				3.04		73.49	
	3 D.B.P/S				3.47		65.78	
	4 D.B. ℄				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ℄				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total			2489	3.26	11362.5	19.71	68719.1
Fuel Oil	1B D.T.℄				20.44		251.12	
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S				25.86		-56.49	
	5A W. P				27.01		-106.11	
	5A W. S				27.01		-106.11	
	5B W. P				28.32		-145.92	
	5B W. S				28.32		-145.92	
	F.O.Set.P				32.15		-176.26	
	F.O.Set.S				32.15		-176.26	
	Total	5279.71	3364		26.03	87564.8	44.11	148279.8
Fresh Water	F.W.D.B.S				4.02		-208.40	
	F.W.D.B.P				3.99		-208.52	
	F.W.D.B.℄				4.04		-263.16	
	P.W. Fwd.				23.50		224.75	
	P.W. ℄				35.25		-286.50	
	D.W. Fwd.				36.20		-282.68	
	D.W. Aft				36.49		-291.34	
	Total	2588.51		295	15.30	4512.7	262.76	-77515.2

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1	7	[illegible]	[illegible]	4315.9	265.58	14872.4
	2	1			[illegible]	[illegible]	208.40	[illegible]
	2	2			[illegible]	[illegible]	184.40	26553.6
	2	3			[illegible]	[illegible]	160.80	25728.0
	2	4			[illegible]	[illegible]	136.90	21904.0
	3	1			[illegible]	[illegible]	109.60	[illegible]
	3	2			[illegible]	[illegible]	87.00	28536.0
	3	3			[illegible]	[illegible]	61.90	[illegible]
	3	4			[illegible]	[illegible]	38.30	13113.9
	4	1			[illegible]	[illegible]	10.80	[illegible]
	4	2			[illegible]	[illegible]	-13.10	[illegible]
	4	3			[illegible]	[illegible]	-36.80	[illegible]
	4	4			[illegible]	[illegible]	-60.60	[illegible]
	5	1			[illegible]	[illegible]	-88.10	[illegible]
	5	2			[illegible]	[illegible]	-132.00	[illegible]
	5	3			[illegible]	[illegible]	-175.90	[illegible]
	5	4			[illegible]	[illegible]	-200.20	[illegible]
Total Weather			446	5276.4	72.37	381839.0	-9.99	-52717.4
Average Unit Wt.								
Below	1	1			[illegible]	[illegible]	265.58	[illegible]
	2	1			[illegible]	[illegible]	208.40	[illegible]
	2	2			[illegible]	[illegible]	184.40	[illegible]
	2	3			[illegible]		160.80	[illegible]
	2	4			[illegible]		136.90	[illegible]
	3	1			[illegible]	[illegible]	109.60	[illegible]
	3	2			[illegible]	[illegible]	87.00	[illegible]
	3	3					61.90	[illegible]
	3	4					38.30	[illegible]
	4	1					10.80	[illegible]
	4	2					-13.10	[illegible]
	4	3					-36.80	[illegible]
	4	4					-60.60	[illegible]
	5	1					-88.10	[illegible]
	5	2					-132.00	[illegible]
	5	3					-175.90	[illegible]
	5	4					-200.20	[illegible]
Total Below			648	10208.8	22.57	332432.9	2.33	23752.5
Average Unit Wt.								
Total Container			1094	15485.2	46.13	714271.9	-1.87	-28964.9

Condition:- 100% Cargo (95.6%)
50% Consumables
8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/s
Lightship	12118	35.36	428492.5	-38.33	-464482.9	
Crew & Effects	10	75.00	750.0	-100.00	-1000.0	
Stores	38	47.00	1786.0	-271.50	-10317.0	
Lube Oil	98	36.83	3610.0	-287.26	-28151.5	577.03
Diesel Oil	14	40.00	560.0	-300.51	-4207.1	52.26
Salt Water Ballast	2489	3.26	11362.5	19.71	68719.1	
Fuel Oil	3364	26.03	87564.8	44.11	148279.8	5279.71
Fresh Water	295	15.30	4512.7	-262.76	-77515.2	2588.51
Containers	15485	46.13	714271.9	-1.87	-28964.9	
Subtotal	24911	[illegible]	[illegible]	[illegible]	[illegible]	8497.51
Upper Stabilization Tank	162	[illegible]	4916.4	[illegible]	[illegible]	21338.00
Lower Stabilization Tank				[illegible]		
Total	[illegible]	[illegible]	[illegible]	-11.63	-409707.7	29835.51

7.0 } Liquid Level in Tank (Feet)

Salt Water Ballast

Fuel Oil

Fresh Water

	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	[illegible]	Ft.	[illegible]	Ft.
KM'	[illegible]	Ft.	[illegible]	Ft.
VCG	[illegible]	Ft.	35.86	Ft.
GM KM-VCG	[illegible]	Ft.	2.54	Ft.
Free Surface Corr FS 1/s △	[illegible]	Ft.	0.85	Ft.
GM Available GM-FS	[illegible]	Ft.	2.69	Ft.
GM Required (Page 9)	[illegible]	Ft.	2.08	Ft.

LCB (-Aft ⌀) [illegible] Ft.
LCG (-Aft ⌀) -11.63 Ft.
Trim Lever TL LCB-LCG 1.08 Ft.
MT1" 3855 Ft.-Tons
Trim T △x TL/MT1" (+ by stern) 9.83 In.
LCF (-Aft ⌀) -21.9 Ft.
Aft Draft Change ha T(.5-LCF/LBP) 5.23 In.
Fwd.Draft Change hf ha-T -4.60 In.
Draft Aft Ha Hm+ha 31.84 Ft. 31'-10"
Draft Fwd. Hf Hm+hf [illegible] Ft. 31'-0¼"

Condition:
Cargo 100% (95.6%)
Consumables 50%
Container Height 8'-3"

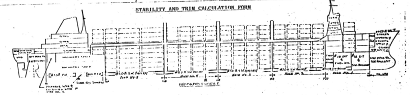
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	1/s	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.℄				17.94		283.92	
	1 D.B. ℄				3.40		232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ℄			624	3.04	1921.0	73.49	46592.7
	3 D.B.P/S			482	3.47	1672.5	65.78	31706.0
	4 D.B. ℄			624	3.04	1921.0	-26.50	-16801.0
	4 D.B.P/S			720	3.32	2390.4	-26.41	-19015.2
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S			488	3.50	1708.0	-120.07	-58594.2
	5 D.B. ℄				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total			2938	3.25	9612.9	5.45	-16011.7
Fuel Oil	1B D.T.℄	4349.77	485		20.44	14001.4	251.12	172017.2
	2A W. P	65.66	297		25.98	7689.3	190.68	56632.0
	2A W. S	65.66	297		25.98	7689.3	190.68	56632.0
	2B W. P	45.14	266		26.03	6924.0	142.87	38003.4
	2B W. S	45.14	266		26.03	6924.0	142.87	38003.4
	3A W. P	70.99	220		27.76	6107.2	107.83	23722.6
	3A W. S	70.99	220		27.76	6107.2	107.83	23722.6
	3B W. P	126.80	380		27.58	10480.4	72.69	27622.2
	3B W. S	126.80	380		27.58	10480.4	72.69	27622.2
	3C W. P	107.14	352		26.44	9306.9	38.31	13661.1
	3C W. S	107.14	352		26.44	9306.9	38.31	13661.1
	4A W. P	107.14	345		25.92	8942.4	8.45	2915.3
	4A W. S	107.14	345		25.92	8942.4	8.45	2915.3
	4C W. P	71.43	231		25.86	5973.7	-56.49	-13049.2
	4C W. S	71.43	231		25.86	5973.7	-56.49	-13049.2
	5A W. P	142.86	427		27.01	11533.3	-106.11	-45309.0
	5A W. S	142.86	427		27.01	11533.3	-106.11	-45309.0
	5B W. P	142.86	370		28.32	10478.4	-145.92	-53990.4
	5B W. S	142.86	370		28.32	10478.4	-145.92	-53990.4
	F.O.Set.P	67.66	132		32.15	4243.8	-176.26	-23442.6
	F.O.Set.S	67.66	132		32.15	4243.8	-176.26	-23442.6
	Total	6645.01	6127		26.39	177520.2	[illegible]	[illegible]
Fresh Water	F.W.D.B.S	1022.49		123	4.02	494.5	-208.40	-25633.2
	F.W.D.B.P	1022.51		121	3.99	482.8	-208.52	-25230.9
	F.W.D.B.℄			139	4.04	561.6	-263.16	-36579.2
	P.W. Fwd.			21	23.50	493.5	224.75	4719.5
	P.W. ℄	51.94		63	35.25	2220.8	-286.50	-18049.5
	D.W. Fwd.			56	36.20	2027.2	-282.68	-15830.1
	D.W. Aft	390.57		65	36.49	2371.9	-291.34	-18937.1
	Total	2588.51		588	14.71	8652.3	-230.51	-135540.9

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1	7	56.0	77.07	4315.9	265.58	14872.4
	2	1	18	144.0	70.41	10138.4	208.40	30009.6
	2	2	18	144.0	70.41	10138.4	184.40	26553.6
	2	3	20	160.0	70.41	11264.8	160.80	25728.0
	2	4	20	160.0	70.41	11264.8	136.90	21904.0
	3	1	33	328.0	73.72	24181.8	109.60	35948.8
	3	2	33	328.0	73.72	24181.8	87.00	28536.0
	3	3	33	328.0	73.72	24181.8	61.90	20303.2
	3	4	33	342.4	72.41	25136.2	38.30	13113.9
	4	1	33	371.8	73.11	27183.9	10.80	4015.4
	4	2	33	371.8	73.11	27183.9	-13.10	-4870.6
	4	3	33	371.8	73.11	27183.9	-36.80	-13682.2
	4	4	33	371.8	73.11	27183.9	-60.60	-22531.1
	5	1	33	743.6	73.11	54367.8	-88.10	-65511.2
	5	2	33	567.6	70.12	39798.5	-132.00	-74923.2
	5	3	22	223.6	69.53	15546.2	-175.90	-39331.2
	5	4	22	264.0	70.41	18587.0	-200.20	-52852.8
Total Weather			446	5276.4	72.37	381839.0	-9.99	-52717.4
Average Unit Wt.								
Below	1	1	16	216.0	52.77	11400.2	265.58	57365.2
	2	1	32	297.0	35.83	10641.5	208.40	61894.8
	2	2	26	351.0	35.08	12313.0	184.40	64724.4
	2	3	30	405.0	33.43	13539.1	160.80	65124.0
	2	4	38	513.0	33.78	17327.7	136.90	70229.7
	3	1	40	540.0	33.84	18274.8	109.60	59184.0
	3	2	44	594.0	32.45	19278.1	87.00	51678.0
	3	3	46	652.8	30.80	20103.2	61.90	40408.3
	3	4	48	690.4	29.69	20496.6	38.30	26442.3
	4	1	48	690.4	29.69	20496.6	10.80	7456.3
	4	2	48	690.4	29.69	20496.6	-13.10	-9044.2
	4	3	48	690.4	29.69	20496.6	-36.80	-25406.7
	4	4	48	690.4	29.69	20496.6	-60.60	-41838.2
	5	1	46	1242.0	23.87	29565.0	-88.10	-109420.2
	5	2	44	1188.0	22.46	26656.7	-132.00	-156816.0
	5	3	40	540.0	33.84	18274.8	-175.90	-94986.0
	5	4	16	216.0	49.42	10675.8	-200.20	-43243.2
Total Below			648	10208.8	22.57	332432.9	2.33	23752.5
Average Unit Wt.								
Total Container			1094	15485.2	46.12	714271.9	-1.87	-28964.9

Condition:- 100% Cargo (95.6% Cargo)
100% Consumables
8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/s
Lightship	12118	35.36	428493	-38.33	-464483	
Crew & Effects	10	75.00	750	-100.00	-1000	
Stores	75	47.00	3525	-271.50	-20363	
Lube Oil	98	36.83	3610	-287.26	-28152	577.03
Diesel Oil	27	40.00	1080	-300.51	-8114	52.26
Salt Water Ballast	2958	3.25	9612	-5.45	-16112	
Fuel Oil	6727	26.39	177520	35.52	[illegible]	6645.01
Fresh Water	588	14.71	8652	-230.51	-135541	2588.51
Containers	15485	46.12	714272	-1.87	-28965	
Subtotal	38086	35.38	1347515	-12.48	-475488	9462.81
Upper Stabilization Tank	163	30.53	4976	-75.39	-12229	21338.00
Lower Stabilization Tank				-75.38		
Total	38249	35.36	1352491	-12.75	-487717	30800.81

7.0 } Liquid Level in Tank (Feet)

Salt Water Ballast

Fuel Oil

Fresh Water

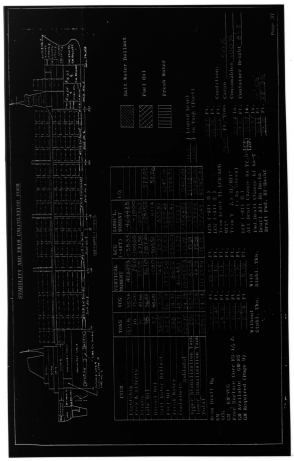
	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	33.60	Ft.	33.71	Ft.
KM'	39.49	Ft.	39.50	Ft.
VCG	35.38	Ft.	35.36	Ft.
GM KM-VCG	4.11	Ft.	4.14	Ft.
Free Surface Corr FS 1/s △	0.25	Ft.	0.81	Ft.
GM Available GM-FS	3.86	Ft.	3.31	Ft.
GM Required (Page 9)	2.40	Ft.	2.42	Ft.

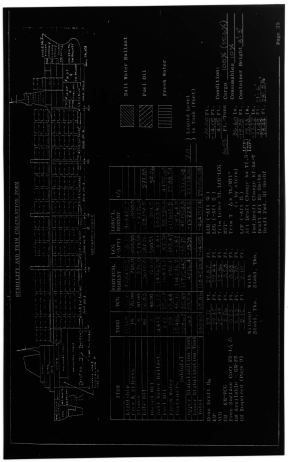
LCB (-Aft ⌀) -11.87 Ft.
LCG (-Aft ⌀) -12.75 Ft.
Trim Lever TL LCB-LCG 1.08 Ft.
MT1" 4200 Ft.-Tons
Trim T △x TL/MT1" (+ by stern) 9.84 In.
LCF (-Aft ⌀) -25.2 Ft.
Aft Draft Change ha T(.5-LCF/LBP) 5.29 In.
Fwd.Draft Change hf ha-T -4.55 In.
Draft Aft Ha Hm+ha 34.15 Ft. 34'-1¾"
Draft Fwd. Hf Hm+hf 33.33 Ft. 33'-4"

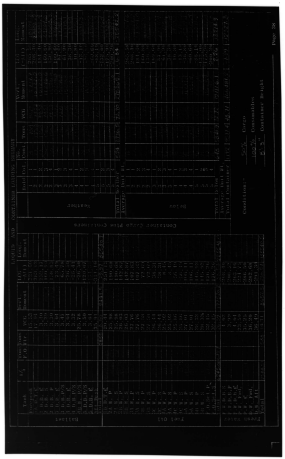
Condition:
Cargo 100% (95.6%)
Consumables 100%
Container Height 8'-3"

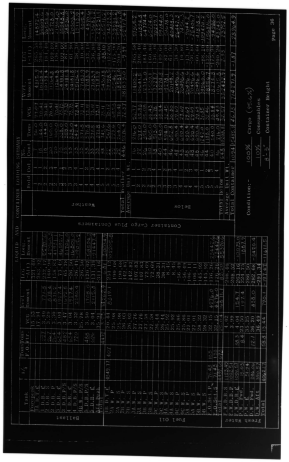
H-4639-III-13-6
Alt.-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X









LIQUID AND CONTAINER LOADING SUMMARY

	Tank	i/s	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		[illegible]	
	1A D.T.℄				17.94		[illegible]	
	1 D.B. ℄				3.40		232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ℄				3.04		73.49	
	3 D.B.P/S				3.47		65.78	
	4 D.B. ℄				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ℄				3.04		[illegible]	
	Aft Peak				35.91		-311.16	
	Total			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fuel Oil	1B D.T.℄				20.44		251.12	
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S				25.86		-56.49	
	5A W. P				27.01		-106.11	
	5A W. S				27.01		-106.11	
	5B W. P				28.32		-145.92	
	5B W. S				28.32		-145.92	
	F.O.Set.P				32.15		-176.26	
	F.O.Set.S				32.15		-176.26	
	Total	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
Fresh Water	F.W.D.B.S				4.02		208.40	
	F.W.D.B.P				3.99		208.52	
	F.W.D.B.℄				4.04		263.16	
	P.W. Fwd.				23.50		224.75	
	P.W. ℄				35.25		286.50	
	D.W. Fwd.				36.20		-282.68	
	D.W. Aft				36.49		-291.34	
	Total	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

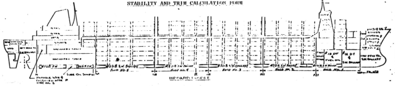
Container Cargo Plus Containers		Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather		1	1		[illegible]	[illegible]	[illegible]	265.58	[illegible]
		2	1					208.40	
		2	2					181.40	
		2	3					169.80	
		2	4					136.90	
		3	1					109.60	
		3	2					87.00	
		3	3					61.90	
		3	4					38.30	
		4	1					10.80	
		4	2					-13.10	
		4	3					[illegible]	
		4	4					-60.60	
		5	1					-88.10	
		5	2					-132.00	
		5	3					-175.90	
		5	4					-200.20	
Total Weather				524	3726.5	72.10	275360.1	-6.84	-25542.2
Average Unit Wt.									
Below		1	1					265.58	
		2	1					208.40	
		2	2					181.40	
		2	3					160.80	
		2	4					136.90	
		3	1					109.60	
		3	2					87.00	
		3	3					61.90	
		3	4					38.30	
		4	1					10.80	
		4	2					-13.10	
		4	3					-36.80	
		4	4					-60.60	
		5	1					-88.10	
		5	2					-132.00	
		5	3					-175.90	
		5	4					-200.20	
Total Below				[illegible]	[illegible]	[illegible]	[illegible]	2.26	32214.9
Average Unit Wt.									
Total Container				[illegible]	[illegible]	48.11	[illegible]	[illegible]	[illegible]

Condition:- 50% Cargo

100% Consumables

8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/s
Lightship	12118	35.36	428493	-38.33	-464485	
Crew & Effects	10	75.00	750	-100.00	-1000	
Stores	[illegible]	47.00	[illegible]	-271.50	[illegible]	
Lube Oil	98	36.83	3610	-287.26	-28152	577.03
Diesel Oil	27	40.00	1080	-300.51	8114	52.26
Salt Water Ballast	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Fuel Oil	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fresh Water	[illegible]	14.71	[illegible]	[illegible]	[illegible]	[illegible]
Containers	[illegible]	48.11	[illegible]	[illegible]	[illegible]	
Subtotal	[illegible]	24.18	[illegible]	[illegible]	[illegible]	[illegible]
Upper Stabilization Tank	[illegible]	[illegible]	[illegible]	-75.39	[illegible]	[illegible]
Lower Stabilization Tank	[illegible]	[illegible]	[illegible]	-75.26	[illegible]	[illegible]
Total	[illegible]	24.14	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] } Liquid Level
[illegible] } in Tank (Feet)

Salt Water Ballast

Fuel Oil

Fresh Water

	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	[illegible]	Ft.	[illegible]	Ft.
KM	[illegible]	Ft.	[illegible]	Ft.
VCG	[illegible]	Ft.	[illegible]	Ft.
GM KM-VCG	[illegible]	Ft.	[illegible]	Ft.
Free Surface Corr FS 1/△	[illegible]	Ft.	[illegible]	Ft.
GM Available GM-FS	[illegible]	Ft.	[illegible]	Ft.
GM Required (Page 9)	[illegible]	Ft.	[illegible]	Ft.

LCB (-Aft ⊗)	[illegible]	Ft.
LCG (-Aft ⊗)	[illegible]	Ft.
Trim Lever TL LCB-LCG	[illegible]	Ft.
MT1"	[illegible]	Ft.-Tons
Trim T △x TL/MT1" (+ by stern)	[illegible]	In.
LCF (-Aft ⊗)	[illegible]	Ft.
Aft Draft Change ha T(.5-LCF/LBP)	[illegible]	In.
Fwd.Draft Change hf ha-T	[illegible]	In.
Draft Aft Ha Hm+ha	[illegible]	Ft. [illegible]
Draft Fwd. Hf Hm+hf	[illegible]	Ft. [illegible]

Condition:

Cargo [illegible]

Consumables [illegible]

Container Height 8'-3"

LIQUID AND CONTAINER LOADING SUMMARY

	Tank	i/s	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.℄				17.94		283.92	
	1 D.B. ℄			227	3.40	771.8	232.17	52703.6
	2 D.B. S			247	3.29	818.4	160.90	[illegible]
	2 D.B. P			244	3.30	811.2	158.83	41951.1
	3 D.B. ℄			624	3.04	1927.4	73.49	46592.7
	3 D.B.P/S			482	3.47	1672.5	65.78	31706.0
	4 D.B. ℄			634	3.04	1927.4	-26.50	-16801.0
	4 D.B.P/S			720	3.32	2390.4	-26.41	-19015.2
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S			488	3.50	1708.0	-120.07	-58594.2
	5 D.B. ℄			696	3.04	2115.8	-131.39	-91447.4
	Aft Peak				35.91		-311.16	
	Total			4412	[illegible]	14262.9	6.81	30024.9
Fuel Oil	1B D.T.℄	4249.77	407		20.44	8319.1	251.12	102205.6
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S				25.86		-56.49	
	5A W. P				27.01		-106.11	
	5A W. S				27.01		-106.11	
	5B W. P				28.32		-145.92	
	5B W. S				28.32		-145.92	
	F.O.Set.P	71.42	133		32.15	4276.0	-176.26	-23442.6
	F.O.Set.S	71.42	133		32.15	4276.0	-176.26	-23442.6
	Total	4492.62	672		25.44	16811.1	82.20	55320.6
Fresh Water	F.W.D.B.S	1123.49			4.02		-208.40	
	F.W.D.B.P	1022.51			3.99		-208.52	
	F.W.D.B.℄	1091.57		38.3	4.04	154.7	-263.16	-10079.0
	P.W. Fwd.	13.03		8.4	23.50	197.4	224.75	1887.9
	P.W. ℄	51.94			35.25		-286.50	
	D.W. Fwd.	396.06		12.1	36.20	438.0	-282.68	-3420.4
	D.W. Aft	390.57			36.49		-291.34	
	Total	4062.17		58.8	13.44	790.1	-197.47	-11611.5

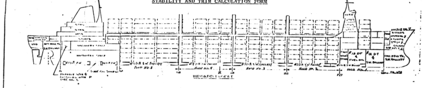
Container Cargo Plus Containers		Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather		1	1	7	56.0	77.07	4315.9	265.58	14872.4
		2	1	18	144.0	70.41	10138.4	208.40	30009.6
		2	2	18	144.0	70.41	10138.4	181.40	26553.6
		2	3	20	160.0	70.41	11264.8	169.80	25728.0
		2	4	20	160.0	70.41	11264.8	136.90	21904.0
		3	1	33	328.0	73.72	24181.8	109.60	35948.8
		3	2	33	328.0	73.73	24181.8	87.00	28536.0
		3	3	33	328.0	73.73	24181.8	61.90	20303.2
		3	4	33	342.4	73.41	25136.2	38.30	13113.9
		4	1	33	371.8	73.11	27183.9	10.80	4015.4
		4	2	33	371.8	73.11	27183.9	-13.10	-4870.6
		4	3	33	371.8	73.11	27183.9	-36.80	-13682.2
		4	4	33	371.8	73.11	27183.9	-60.60	-22531.1
		5	1	33	743.6	73.11	54367.8	-88.10	-65511.2
		5	2	22	567.6	70.12	39798.5	-132.00	-74923.2
		5	3	22	223.6	69.53	15546.2	-175.90	-39331.2
		5	4	22	264.0	70.41	18587.0	-200.20	-52852.8
Total Weather				446	5276.4	72.37	381839.0	-9.99	-52717.4
Average Unit Wt.									
Below		1	1	16	216.0	52.77	11400.2	265.58	57365.2
		2	1	22	297.0	35.83	10641.5	208.40	61894.8
		2	2	26	351.0	35.08	12313.0	181.40	64724.4
		2	3	30	405.0	33.43	13539.1	160.80	65124.0
		2	4	38	513.0	33.78	17327.7	136.90	70229.7
		3	1	40	540.0	33.84	18274.8	109.60	59184.0
		3	2	44	594.0	32.45	19278.1	87.00	51678.0
		3	3	46	652.8	30.80	20108.2	61.90	40408.3
		3	4	48	690.4	29.69	20496.6	38.30	26442.3
		4	1	48	690.4	29.69	20496.6	10.80	7456.3
		4	2	48	690.4	29.69	20496.6	-13.10	-9044.2
		4	3	48	690.4	29.69	20496.6	-36.80	-25406.7
		4	4	48	690.4	29.69	20496.6	-60.60	-41838.2
		5	1	46	1242.0	31.85	39560.0	-88.10	-109420.2
		5	2	44	1188.0	32.46	38556.7	-132.00	-156816.0
		5	3	40	540.0	33.84	18274.8	-175.90	-94986.0
		5	4	16	216.0	49.43	10675.8	-200.20	-43243.0
Total Below				648	10208.8	32.57	332432.9	2.33	23752.5
Average Unit Wt.									
Total Container				1094	15485.2	46.13	714271.9	-1.87	-28964.9

Condition:- 100% Cargo (95.6%)

10% Consumables

8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/s
Lightship	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Crew & Effects	10	75.00	750.0	-100.00	1000.0	
Stores	8	47.00	376.0	-271.50	[illegible]	
Lube Oil	98	36.83	3610.0	-287.26	-28157.5	577.03
Diesel Oil	[illegible]	40.00	[illegible]	300.51	[illegible]	52.26
Salt Water Ballast	4412	[illegible]	14262.9	6.81	30024.9	
Fuel Oil	672	[illegible]	16811.1	82.20	55320.6	4492.62
Fresh Water	59	13.44	790.1	197.47	-11611.5	[illegible]
Containers	15485	46.13	714271.9	-1.87	-28964.9	
Subtotal	[illegible]	25.89	[illegible]	-13.75	-451923.8	[illegible]
Upper Stabilization Tank	162	[illegible]	4976.4	-75.39	-12228.6	[illegible]
Lower Stabilization Tank						
Total	[illegible]	25.86	1184520.9	-14.05	-464157.4	29656.08

7.0 } Liquid Level
} in Tank (Feet)

Salt Water Ballast

Fuel Oil

Fresh Water

	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	29.72	Ft.	29.87	Ft.
KM	29.45	Ft.	29.44	Ft.
VCG	25.89	Ft.	25.86	Ft.
GM KM-VCG	3.56	Ft.	3.58	Ft.
Free Surface Corr FS 1/△	[illegible]	Ft.	0.88	Ft.
GM Available GM-FS	[illegible]	Ft.	2.70	Ft.
GM Required (Page 9)	[illegible]	Ft.	2.10	Ft.

LCB (-Aft ⊗)	-10.00	Ft.
LCG (-Aft ⊗)	-14.05	Ft.
Trim Lever TL LCB-LCG	4.05	Ft.
MT1"	3655	Ft.-Tons
Trim T △x TL/MT1" (+ by stern)	36.60	In.
LCF (-Aft ⊗)	-12.75	Ft.
Aft Draft Change ha T(.5-LCF/LBP)	19.28	In.
Fwd.Draft Change hf ha-T	-17.22	In.
Draft Aft Ha Hm+ha	31.49	Ft. 31'-6"
Draft Fwd. Hf Hm+hf	28.44	Ft. 28'-5¼"

Condition:

Cargo 100% (95.6%)

Consumables 10%

Container Height 8'-3"

Alt- H-9

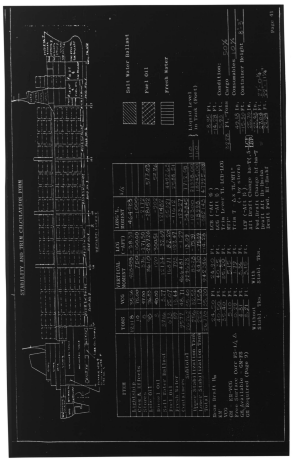
BETHLEHEM STEEL CORP. JULY 1974

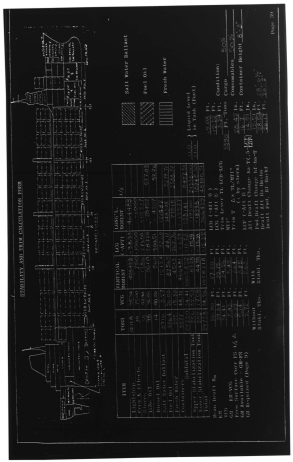
H 4639-4640

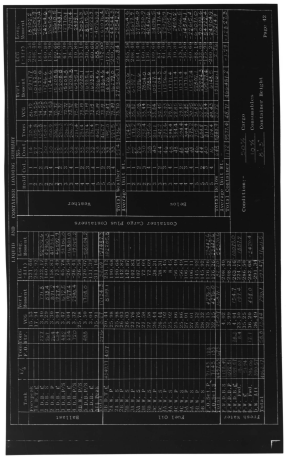
6X

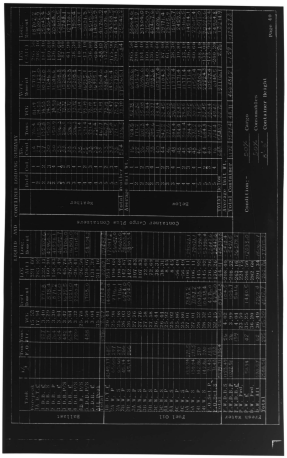
F-4639-111-13-6
Alt.-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



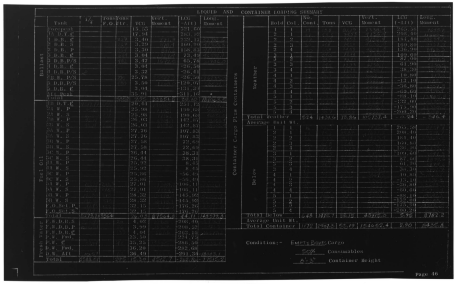


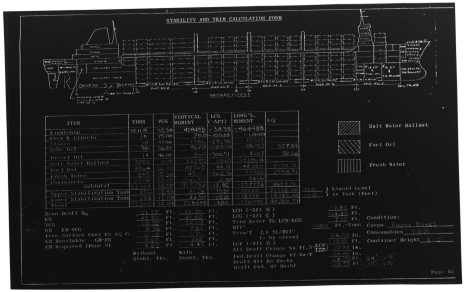


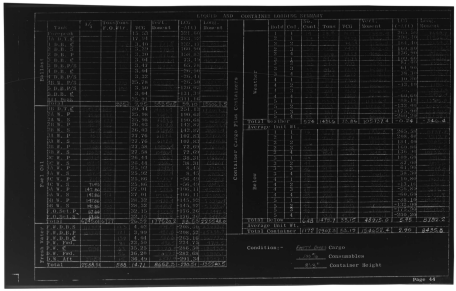


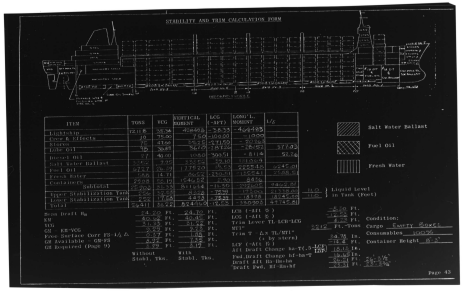
H-4639-111-13-6
Alt-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X









H-4639.111.13-6 Alt.- H-9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

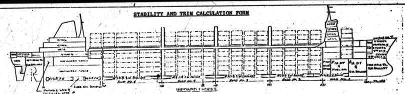
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	i/δ	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.℄				17.94		283.92	
	1 D.B. ℄			227	3.40	771.8	232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ℄				3.04		73.49	
	3 D.B.P/S			432	3.47		65.78	
	4 D.B. ℄				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ℄				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total			3352	9.95	33351.5	39.10	131063.5
Fuel Oil	1B D.T.℄				20.44		251.12	
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S				25.86		-56.49	
	5A W. P				27.01		-106.11	
	5A W. S				27.01		-106.11	
	5B W. P				28.32		-145.92	
	5B W. S				28.32		-145.92	
	F.O.Set.P				32.15		-176.26	
	F.O.Set.S				32.15		-176.26	
	Total	5279.71	3364		26.03	87564.8	44.11	148379.8
Fresh Water	F.W.D.B.S				4.02		-208.40	
	F.W.D.B.P				3.99		-208.52	
	F.W.D.B.℄				4.04		-263.16	
	P.W. Fwd.				23.50		224.75	
	P.W. ℄				35.25		-286.50	
	D.W. Fwd.				36.20		-282.68	
	D.W. Aft				36.49		-291.34	-18063.1
	Total	2583.51		295	15.30	4512.7	-262.76	-77515.2

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Weather			524	1431.6	73.86	105737.4	-0.24	-346.4
Average Unit Wt.								
Below	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Below			648	1475.7	33.15	48915.0	5.95	8782.2
Average Unit Wt.								
Total Container			1172	2907.3	53.19	154652.4	2.90	8436.8

Condition:- Empty Boxes Cargo
50% Consumables
8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/δ	
Lightship	12118	35.36	428493	-38.33	-464483		
Crew & Effects	10	75.00	750	-100.00	-1000		
Stores	38	47.00	1786	-271.50	-10317		
Lube Oil	98	36.83	3610	-287.26	-28152	577.03	
Diesel Oil	14	40.00	560	-300.51	-4207	52.26	
Salt Water Ballast	3352	9.95	33352	39.10	131064		
Fuel Oil	3364	26.03	87565	44.11	148380	5279.71	
Fresh Water	295	15.30	4512	-262.76	-77515	2588.51	
Containers	2908	53.19	154652	2.90	8436		
Subtotal	22197	32.22	715281	-13.42	-297794	8497.51	
Upper Stabilization Tank	256	32.53	8328	-75.39	-19300	21338.00	11.0 } Liquid Level
Lower Stabilization Tank	252	17.58	4430	-75.39	-18998	18945.00	11.0 } in Tank (Feet)
Total	22705	32.07	728039	14.80	-336092	48180.51	

	Without Stabl. Tks.	With Stabl. Tks.
Mean Draft H_m	21.22 Ft.	21.70 Ft.
KM	42.20 Ft.	41.90 Ft.
VCG	32.22 Ft.	32.07 Ft.
GM KM-VCG	9.98 Ft.	9.83 Ft.
Free Surface Corr FS i/δ Δ	0.38 Ft.	[illegible] Ft.
GM Available GM-FS	9.60 Ft.	7.68 Ft.
GM Required (Page 9)	4.82 Ft.	4.45 Ft.

LCB (-Aft ⊗)	-7.47 Ft.	
LCG (-Aft ⊗)	-14.80 Ft.	
Trim Lever TL LCB-LCG	7.33 Ft.	
MT1"	3080 Ft.-Tons	
Trim T Δx TL/MT1" (+ by stern)	54.03 In.	
LCF (-Aft ⊗)	-12.0 Ft.	
Aft Draft Change ha T(.5-LCF/LBP)	27.97 In.	
Fwd. Draft Change hf ha-T	26.06 In.	
Draft Aft Ha Hm+ha	24.02 Ft.	24'-0½"
Draft Fwd. Hf Hm-hf	19.52 Ft.	19'-6½"

Salt Water Ballast
Fuel Oil
Fresh Water

Condition:
Cargo Empty Boxes
Consumables 50%
Container Height 8'-3"

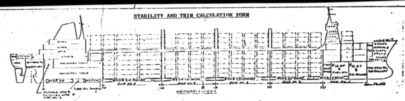
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	i/δ	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.℄				17.94		283.92	
	1 D.B. ℄				3.40		232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ℄				3.04		73.49	
	3 D.B.P/S				3.47		65.78	
	4 D.B. ℄				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ℄				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total			3352	9.95	33351.5	39.10	131063.5
Fuel Oil	1B D.T.℄				20.44		251.12	
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S	71.43			25.86		-56.49	
	5A W. P	142.86			27.01		-106.11	
	5A W. S	142.86			27.01		-106.11	
	5B W. P	142.86			28.32		-145.92	
	5B W. S	142.86			28.32		-145.92	
	F.O.Set.P	67.66			32.15		-176.26	
	F.O.Set.S	67.66			32.15		-176.26	
	Total	6245.01	6727		26.39	177520.2	33.53	225548.0
Fresh Water	F.W.D.B.S				4.02		-208.40	
	F.W.D.B.P				3.99		-208.52	
	F.W.D.B.℄				4.04		-263.16	
	P.W. Fwd.			41	23.50		224.75	
	P.W. ℄				35.25		-286.50	
	D.W. Fwd.				36.20		-282.68	
	D.W. Aft				36.49		-291.34	
	Total	2588.51		588	14.71	8652.3	-230.51	-135540.5

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3						
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Weather			524	1431.6	73.86	105737.4	-0.24	-346.4
Average Unit Wt.								
Below	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Below			648	1475.7	33.15	48915.0	5.95	8782.2
Average Unit Wt.								
Total Container			1172	2907.3	53.19	154652.4	2.90	8435.8

Condition:- Empty Boxes Cargo
100% Consumables
8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/δ	
Lightship	12118	35.56	428493	-38.33	-464483		
Crew & Effects	10	75.00	750	-100.00	-1000		
Stores	75	47.00	3525	-271.50	-20363		
Lube Oil	98	36.83	3610	-287.26	-28152	577.03	
Diesel Oil	27	40.00	1080	-300.51	-8114	52.26	
Salt Water Ballast	3352	9.95	33352	39.10	131064		
Fuel Oil	6727	26.39	177520	33.53	225548	6245.01	
Fresh Water	588	14.71	8652	-230.51	-135541	2588.51	
Containers	2908	53.19	154652	2.90	8436		
Subtotal	25903	31.33	811624	-11.30	-292605	9462.81	
Upper Stabilization Tank	256	32.53	8328	-75.39	-19300	21338.00	11.0 } Liquid Level
Lower Stabilization Tank	252	17.58	4498	-75.39	-18998	18945.00	11.0 } in Tank (Feet)
Total	26411	31.22	824460	-12.53	-330903	49745.81	

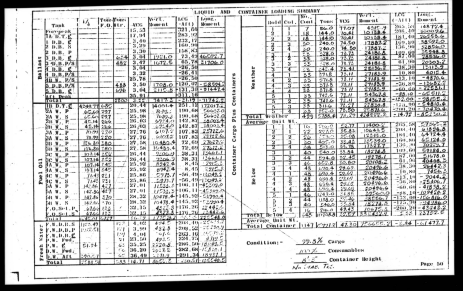
	Without Stabl. Tks.	With Stabl. Tks.
Mean Draft H_m	24.20 Ft.	24.70 Ft.
KM	40.62 Ft.	40.45 Ft.
VCG	31.33 Ft.	31.22 Ft.
GM KM-VCG	9.29 Ft.	9.23 Ft.
Free Surface Corr FS i/δ Δ	0.37 Ft.	1.88 Ft.
GM Available GM-FS	8.92 Ft.	7.35 Ft.
GM Required (Page 9)	3.29 Ft.	3.19 Ft.

LCB (-Aft ⊗)	-8.30 Ft.	
LCG (-Aft ⊗)	-12.52 Ft.	
Trim Lever TL LCB-LCG	4.23 Ft.	
MT1"	3212 Ft.-Tons	
Trim T Δx TL/MT1" (+ by stern)	24.78 In.	
LCF (-Aft ⊗)	-14.4 Ft.	
Aft Draft Change ha T(.5-LCF/LBP)	18.13 In.	
Fwd. Draft Change hf=ha-T	16.65 In.	
Draft Aft Ha Hm+ha	26.21 Ft.	26'-3½"
Draft Fwd. Hf Hm+hf	23.31 Ft.	23'-3¾"

Salt Water Ballast
Fuel Oil
Fresh Water

Condition:
Cargo Empty Boxes
Consumables 100%
Container Height 8'-3"

H-1639-1111-3-6
Alt-
H-9
BETHLEHEM STEEL CORP. JULY 1974
6X
H 4639-4640

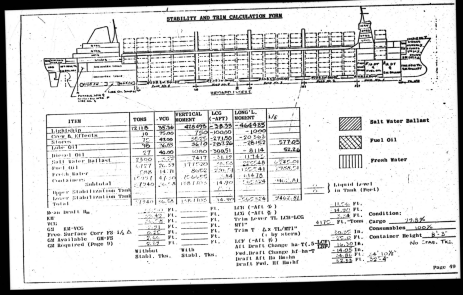


LIQUID AND CONTAINER LOADING SUMMARY

Tank	t/s	Tabs Pass F.O.Htr	WT. Barrels	LCG Barrels	Tank	Grid-Col.	Cont.	Tons	VCG	WT. Barrels	LCG Barrels
Ballast					Weather						
F.W.B. C			3,498	223.0							
F.W.B. P			3,498	223.0							
F.W.B. S			3,498	223.0							
D.B. C			5,238	156.0							
D.B. P			5,238	156.0							
D.B. S			5,238	156.0							
D.B. P/S			9,744	156.0							
D.B. F			3,498	290.0							
D.B. A			3,498	290.0							
D.B. F/A			6,996	290.0							
W.B. P/S			2,736	290.0							
S.B. P			2,736	290.0							
S.B. S			2,736	290.0							
S.B. P/S			5,472	290.0							
Ballast					Container Cargo Plus Containers						
U.W.T.F	4340/1260		29,198	284.0							
U.W.T.P	2640/1260		29,198	284.0							
U.W.T.S	2640/1260		29,198	284.0							
1W.W.P	4540		30,403	242.8							
1W.W.S	4540		30,403	242.8							
2W.W.P	4540		30,403	197.8							
2W.W.S	4540		30,403	197.8							
3W.W.P	4540		30,403	152.8							
3W.W.S	4540		30,403	152.8							
4W.W.P	4540		30,403	107.8							
4W.W.S	4540		30,403	107.8							
5W.W.P	4540		30,403	62.8							
5W.W.S	4540		30,403	62.8							
6W.W.P	4540		30,403	17.8							
6W.W.S	4540		30,403	17.8							
Fuel Oil					Below						
1W.W.P	2640		17,668	242.8							
1W.W.S	2640		17,668	242.8							
2W.W.P	2640		17,668	197.8							
2W.W.S	2640		17,668	197.8							
3W.W.P	2640		17,668	152.8							
3W.W.S	2640		17,668	152.8							
4W.W.P	2640		17,668	107.8							
4W.W.S	2640		17,668	107.8							
5W.W.P	2640		17,668	62.8							
5W.W.S	2640		17,668	62.8							
6W.W.P	2640		17,668	17.8							
6W.W.S	2640		17,668	17.8							
F.O.Sv.P	1260/714		7,452	284.0							
F.O.Sv.S	1260/714		7,452	284.0							
F.O.H.C			10,000	242.8							
F.O.H.P			10,000	242.8							
F.O.H.S			10,000	242.8							
F.O.Ov.	714		4,224	284.0							
F.O. Fwd.			36,289	314.5							
F.O. Aft			36,289	51.5							
Total			553,187	180.7							

Condition:- 75.5% Cargo
100% Consumables
4'-6" Container Height

Page 50



STABILITY AND TRIM CALCULATION FORM

ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT) MOMENT	LONG'L. MOMENT	+/-
Lightship	15,116	30.56	461,755	-38.35	-464,525	
Crew & Effects	75	57.00	4,275	-100.0	-7,500	
Stores	50	33.50	1,675	-101.50	-5,075	577.05
Lube Oil	96	40.00	3,840	-101.50	-9,744	577.05
Diesel Oil	57	40.00	1,080	100.5	-5,728	
Salt Water Ballast	1,017	24.39	24,803	-71.0	-72,207	
Fuel Oil	1,727	24.39	42,115	-71.0	-122,585	
Fresh Water	1,766	24.39	43,075	-71.0	-125,386	
Containers	1,017	47.00	47,800	-.54	-549.18	
Containers Subtotal	2,783	34.39	95,675	-19.89	-55,378	1,154.10
Upper Stabilization Tank						
Lower Stabilization Tank						
Total	23,881	32.56	777,398	-38.39	-916,726	2,308.20

Salt Water Ballast
Fuel Oil
Fresh Water

1 Liquid Level in Tank (Per)

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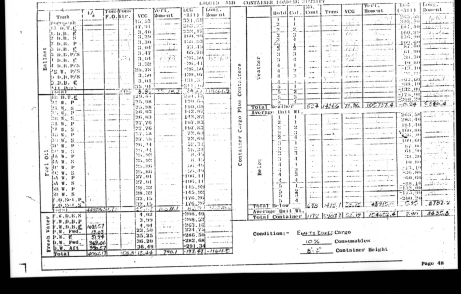

LIQUID AND CONTAINER LOADING SUMMARY

Tank	t/s	Tabs Pass F.O.Htr	WT. Barrels	LCG Barrels	Tank	Grid-Col.	Cont.	Tons	VCG	WT. Barrels	LCG Barrels
Ballast					Weather						
F.W.B. C			3,498	223.0							
F.W.B. P			3,498	223.0							
F.W.B. S			3,498	223.0							
D.B. C			5,238	156.0							
D.B. P			5,238	156.0							
D.B. S			5,238	156.0							
D.B. P/S			9,744	156.0							
D.B. F			3,498	290.0							
D.B. A			3,498	290.0							
D.B. F/A			6,996	290.0							
W.B. P/S			2,736	290.0							
S.B. P			2,736	290.0							
S.B. S			2,736	290.0							
S.B. P/S			5,472	290.0							
Ballast					Container Cargo Plus Containers						
U.W.T.F	4340/1260		29,198	284.0							
U.W.T.P	2640/1260		29,198	284.0							
U.W.T.S	2640/1260		29,198	284.0							
1W.W.P	4540		30,403	242.8							
1W.W.S	4540		30,403	242.8							
2W.W.P	4540		30,403	197.8							
2W.W.S	4540		30,403	197.8							
3W.W.P	4540		30,403	152.8							
3W.W.S	4540		30,403	152.8							
4W.W.P	4540		30,403	107.8							
4W.W.S	4540		30,403	107.8							
5W.W.P	4540		30,403	62.8							
5W.W.S	4540		30,403	62.8							
6W.W.P	4540		30,403	17.8							
6W.W.S	4540		30,403	17.8							
Fuel Oil					Below						
1W.W.P	2640		17,668	242.8							
1W.W.S	2640		17,668	242.8							
2W.W.P	2640		17,668	197.8							
2W.W.S	2640		17,668	197.8							
3W.W.P	2640		17,668	152.8							
3W.W.S	2640		17,668	152.8							
4W.W.P	2640		17,668	107.8							
4W.W.S	2640		17,668	107.8							
5W.W.P	2640		17,668	62.8							
5W.W.S	2640		17,668	62.8							
6W.W.P	2640		17,668	17.8							
6W.W.S	2640		17,668	17.8							
F.O.Sv.P	1260/714		7,452	284.0							
F.O.Sv.S	1260/714		7,452	284.0							
F.O.H.C			10,000	242.8							
F.O.H.P			10,000	242.8							
F.O.H.S			10,000	242.8							
F.O.Ov.	714		4,224	284.0							
F.O. Fwd.			36,289	314.5							
F.O. Aft			36,289	51.5							
Total			553,187	180.7							

Condition:- 75.5% Cargo
100% Consumables
4'-6" Container Height

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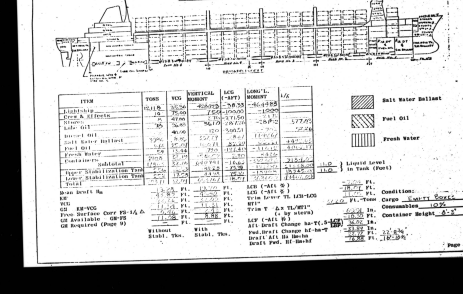

STABILITY AND TRIM CALCULATION FORM

ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT) MOMENT	LONG'L. MOMENT	+/-
Lightship	15,116	30.56	461,755	-38.35	-464,525	
Crew & Effects	75	57.00	4,275	-100.0	-7,500	
Stores	50	33.50	1,675	-101.50	-5,075	577.05
Lube Oil	96	40.00	3,840	-101.50	-9,744	577.05
Diesel Oil	57	40.00	1,080	100.5	-5,728	
Salt Water Ballast	1,017	24.39	24,803	-71.0	-72,207	
Fuel Oil	1,727	24.39	42,115	-71.0	-122,585	
Fresh Water	1,766	24.39	43,075	-71.0	-125,386	
Containers	1,017	47.00	47,800	-.54	-549.18	
Containers Subtotal	2,783	34.39	95,675	-19.89	-55,378	1,154.10
Upper Stabilization Tank						
Lower Stabilization Tank						
Total	23,881	32.56	777,398	-38.39	-916,726	2,308.20

Salt Water Ballast
Fuel Oil
Fresh Water

1 Liquid Level in Tank (Port)

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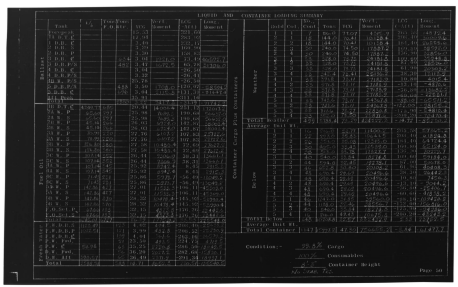
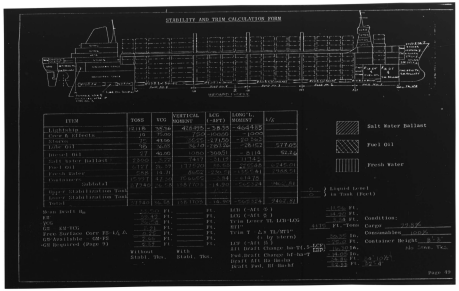
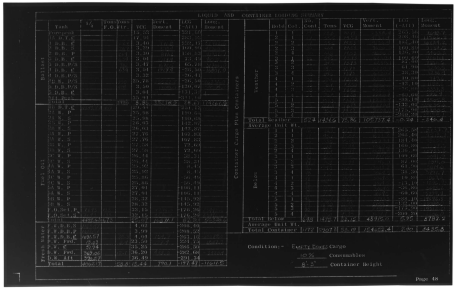
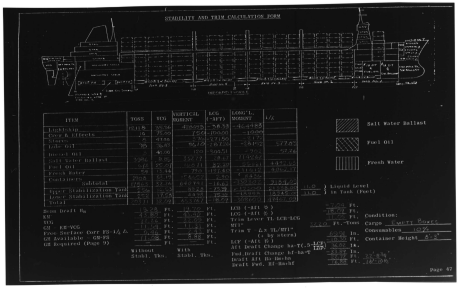
H-4639.111.13-6
Alt-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X









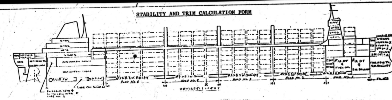
LIQUID AND CONTAINER LOADING SUMMARY

	Tank.	1/δ	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.₵				17.94		283.92	
	1 D.B. ₵			227	3.40	771.8	232.17	52702.6
	2 D.B. S			267	3.29	878.4	160.90	42960.3
	2 D.B. P			264	3.30	871.2	158.83	41931.1
	3 D.B. ₵			634	3.04	1927.4	73.49	46592.7
	3 D.B.P/S			482	3.47	1672.5	65.78	31706.0
	4 D.B. ₵				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S			990	25.78	25522.2	-26.50	-26235.0
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ₵				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total			2864	11.05	31643.5	66.22	189657.7
Fuel Oil	1B D.T.₵	4249.77	685		20.44	14001.4	251.12	172017.2
	2A W. P	65.60	297		25.98	7689.3	190.68	56632.0
	2A W. S	65.60	297		25.98	7689.3	190.68	56632.0
	2B W. P	45.14	266		26.03	6924.0	142.87	38003.4
	2B W. S	45.14	266		26.03	6924.0	142.87	38003.4
	3A W. P	70.99	220		27.76	6107.2	107.83	23722.6
	3A W. S	70.99	220		27.76	6107.2	107.83	23722.6
	3B W. P	126.80	380		27.58	10480.4	72.69	27622.2
	3B W. S	126.80	380		27.58	10480.4	72.69	27622.2
	3C W. P	107.14	352		26.44	9306.9	38.31	13661.1
	3C W. S	107.14	352		26.44	9306.9	38.31	13661.1
	4A W. P	107.14	345		25.92	8942.4	8.45	2915.3
	4A W. S	107.14	345		25.92	8942.4	8.45	2915.3
	4C W. P	71.43	231		25.86	5973.7	-56.49	-13049.2
	4C W. S	71.43	231		25.86	5973.7	-56.49	-13049.2
	5A W. P	142.86	427		27.01	11533.3	-106.11	-45309.0
	5A W. S	142.86	427		27.01	11533.3	-106.11	-45309.0
	5B W. P	142.86	370		28.32	10478.4	-145.92	-53990.4
	5B W. S	142.86	370		28.32	10478.4	-145.92	-53990.4
	F.O.Set.P.	67.66	133		32.15	4323.8	-176.26	-23442.6
	F.O.Set.S	67.66	133		32.15	4323.8	-176.26	-23442.6
	Total	6245.01	6727		26.39	177520.2	33.53	225548.0
Fresh Water	F.W.D.B.S	1123.49		123	4.02	494.5	-208.40	-25633.2
	F.W.D.B.P	1022.51		121	3.99	482.8	-208.52	-25230.9
	F.W.D.B.₵			139	4.04	561.6	-263.16	-36579.2
	P.W. Fwd.			21	23.50	493.5	224.75	4719.5
	P.W. ₵	51.94		63	35.25	2220.8	-286.50	-18049.5
	D.W. Fwd.			56	36.20	2027.2	-282.68	-15830.1
	D.W. Aft	390.57		65	36.49	2371.9	-291.34	-18937.1
	Total	2588.51		588	14.71	8652.3	-230.51	-135540.5

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1						
	5	2						
	5	3					-175.90	
	5	4					-200.20	
Total Weather								
Average Unit Wt.								
Below	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Below								
Average Unit Wt.								
Total Container								

Condition:- (No Boxes)
NONE Cargo
100% Consumables
8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	1/δ
Lightship	12118	35.36	428493	-38.33	-464483	
Crew & Effects	10	75.00	750	-100.00	-1000	
Stores	75	47.00	3525	-271.50	-20363	
Lube Oil	98	36.83	3610	-287.26	-28152	577.03
Diesel Oil	27	40.00	1080	-300.51	-8114	52.26
Salt Water Ballast	2864	11.05	31644	66.22	189658	
Fuel Oil	6727	26.39	177520	33.53	225548	6245.01
Fresh Water	588	14.71	8652	-230.51	-135541	2588.51
Containers						
Subtotal	22507	29.11	655274	-10.73	241547	9462.81
Upper Stabilization Tank	256	32.53	8328	-75.39	-19300	21328.00
Lower Stabilization Tank	252	17.58	4498	-75.39	-18998	18945.00
Total	23015	29.03	668100	-12.16	-279845	49745.81

Liquid Level in Tank (Feet): 11.0 / 11.0

Salt Water Ballast / Fuel Oil / Fresh Water

	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	21.50	Ft.	21.20	Ft.
KM	42.02	Ft.	41.75	Ft.
VCG	29.11	Ft.	29.03	Ft.
GM KM-VCG	12.91	Ft.	12.72	Ft.
Free Surface Corr FS 1/δ Δ	0.42	Ft.	2.16	Ft.
GM Available GM-FS	12.48	Ft.	10.56	Ft.
GM Required (Page 9)	4.60	Ft.	4.29	Ft.

LCB (-Aft ⊗) 1.50 Ft.
LCG (-Aft ⊗) 12.20 Ft.
Trim Lever TL LCB-LCG 4.10 Ft.
MT1" 3081 Ft.-Tons
Trim T Δ x TL/MT1" (+ by stern) 25.04 In.
LCF (-Aft ⊗) -12.20 Ft.
Aft Draft Change ha T(.5-LCF/LBP) 13.14 In.
Fwd. Draft Change hf ha-T -16.20 In.
Draft Aft Ha Hm+ha 22.41 Ft. 22'-5"
Draft Fwd. Hf Hm+hf 20.49 Ft. 20'-6"

Condition:
Cargo NONE (No Boxes)
Consumables 100%
Container Height 8'-3"

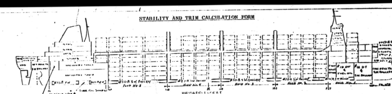
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	1/δ	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.₵				17.94		283.92	
	1 D.B. ₵				3.40		232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ₵				3.04		73.49	
	3 D.B.P/S				3.47		65.78	
	4 D.B. ₵				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ₵				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total							
Fuel Oil	1B D.T.₵	4249.77	685		20.44	14001.4	251.12	172017.2
	2A W. P	65.60	297		25.98	7689.3	190.68	56632.0
	2A W. S	65.60	297		25.98	7689.3	190.68	56632.0
	2B W. P	45.14	266		26.03	6924.0	142.87	38003.4
	2B W. S	45.14	266		26.03	6924.0	142.87	38003.4
	3A W. P	70.99	220		27.76	6107.2	107.83	23722.6
	3A W. S	70.99	220		27.76	6107.2	107.83	23722.6
	3B W. P	126.80	380		27.58	10480.4	72.69	27622.2
	3B W. S	126.80	380		27.58	10480.4	72.69	27622.2
	3C W. P	107.14	352		26.44	9306.9	38.31	13661.1
	3C W. S	107.14	352		26.44	9306.9	38.31	13661.1
	4A W. P	107.14	345		25.92	8942.4	8.45	2915.3
	4A W. S	107.14	345		25.92	8942.4	8.45	2915.3
	4C W. P	71.42	231		25.86	5973.7	-56.49	-13049.2
	4C W. S	71.43	231		25.86	5973.7	-56.49	-13049.2
	5A W. P	142.86	427		27.01	11533.3	-106.11	-45309.0
	5A W. S	142.86	427		27.01	11533.3	-106.11	-45309.0
	5B W. P	142.86	370		28.32	10478.4	-145.92	-53990.4
	5B W. S	142.86	370		28.32	10478.4	-145.92	-53990.4
	F.O.Set.P.	67.66	133		32.15	4323.8	-176.26	-23442.6
	F.O.Set.S	67.66	133		32.15	4323.8	-176.26	-23442.6
	Total	6245.01	6727		26.39	177520.2	33.53	225548.0
Fresh Water	F.W.D.B.S	1123.49		123	4.02	494.5	-208.40	-25633.2
	F.W.D.B.P	1022.51		121	3.99	482.8	-208.52	-25230.9
	F.W.D.B.₵			139	4.04	561.6	-263.16	-36579.2
	P.W. Fwd.			21	23.50	493.5	224.75	4719.5
	P.W. ₵	51.94		63	35.25	2220.8	-286.50	-18049.5
	D.W. Fwd.			56	36.20	2027.2	-282.68	-15830.1
	D.W. Aft	390.57		65	36.49	2371.9	-291.34	-18937.1
	Total	2588.51		588	14.71	8652.3	-230.51	-135540.5

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1						
	5	2						
	5	3					-175.90	
	5	4					-200.20	
Total Weather								
Average Unit Wt.								
Below	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Below								
Average Unit Wt.								
Total Container								

Condition:- NONE (No Boxes) Cargo
100% Consumables
8'-3" Container Height
No BALLAST

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	1/δ
Lightship	12118	35.36	428493	-38.33	-464483	
Crew & Effects	10	75.00	750	-100.00	-1000	
Stores	75	47.00	3525	-271.50	-20363	
Lube Oil	98	36.83	3610	-287.26	-28152	577.03
Diesel Oil	27	40.00	1080	-300.51	8114	52.26
Salt Water Ballast						
Fuel Oil	6427	27.62	177520	35.09	225548	6245.01
Fresh Water	588	14.71	8652	-230.51	-135541	2588.51
Containers						
Subtotal	19343	32.24	623630	-22.34	-432105	9462.81
Upper Stabilization Tank						
Lower Stabilization Tank						
Total	19343	32.24	623630	-22.34	432106	9462.81

Liquid Level in Tank (Feet): 0 / 0

Salt Water Ballast / Fuel Oil / Fresh Water

	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	18.84	Ft.		Ft.
KM	44.20	Ft.		Ft.
VCG	32.24	Ft.		Ft.
GM KM-VCG	11.96	Ft.		Ft.
Free Surface Corr FS 1/δ Δ	0.49	Ft.		Ft.
GM Available GM-FS	11.47	Ft.		Ft.
GM Required (Page 9)		Ft.		Ft.

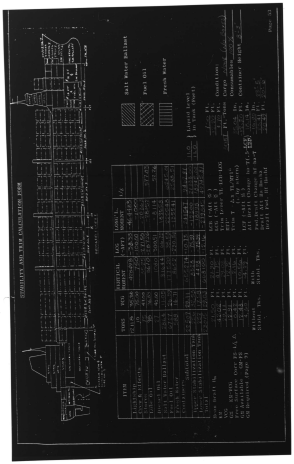
LCB (-Aft ⊗) -6.88 Ft.
LCG (-Aft ⊗) -22.34 Ft.
Trim Lever TL LCB-LCG 15.46 Ft.
MT1" 3020 Ft.-Tons
Trim T Δ x TL/MT1" (+ by stern) 99.02 In.
LCF (-Aft ⊗) -2.07 Ft.
Aft Draft Change ha T(.5-LCF/LBP) 50.93 In.
Fwd. Draft Change hf ha-T -48.09 In.
Draft Aft Ha Hm+ha 23.08 Ft. 23'-1"
Draft Fwd. Hf Hm+hf 14.83 Ft. 14'-10"

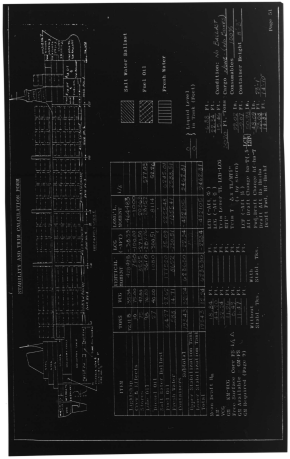
Condition: No BALLAST
Cargo NONE - (No Boxes)
Consumables 100%
Container Height 8'-3"

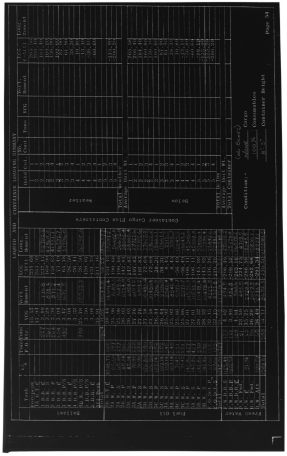
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X
Alt -
H-9

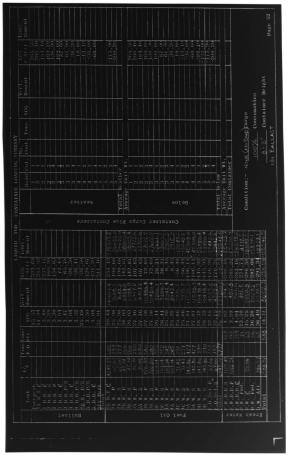
H-4639-III-13-6
Alt.-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 6X









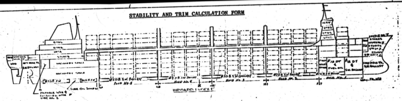
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	1/s	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T. ℄			[illegible]	17.94	[illegible]	283.92	[illegible]
	1 D.B. ℄			[illegible]	3.40	[illegible]	232.17	[illegible]
	2 D.B. S			[illegible]	3.29	[illegible]	160.90	[illegible]
	2 D.B. P			[illegible]	3.30	[illegible]	158.83	[illegible]
	3 D.B. ℄			[illegible]	3.04	[illegible]	73.49	[illegible]
	3 D.B.P/S			[illegible]	3.47		65.78	[illegible]
	4 D.B. ℄				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S			[illegible]	25.78	[illegible]	-26.50	[illegible]
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ℄				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total			3391	12.12	41097.9	100.05	339283.5
Fuel Oil	1B D.T. ℄				20.44		251.12	
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S				25.86		-56.49	
	5A W. P				27.01		-106.11	
	5A W. S				27.01		-106.11	
	5B W. P				28.32		-145.92	
	5B W. S				28.32		-145.92	
	F.O.Set.P				32.15		-176.26	
	F.O.Set.S				32.15		-176.26	
	Total	4492.63	673		25.07	16871.1	82.20	55320.6
Fresh Water	F.W.D.B.S				4.02		-208.40	
	F.W.D.B.P				3.99		-208.52	
	F.W.D.B.℄				4.04		-263.16	
	P.W. Fwd.				23.50		224.75	
	P.W. ℄				35.25		-286.50	
	D.W. Fwd.				36.20		-282.68	
	D.W. Aft				36.49		-291.34	
	Total	4062.17		58.8	13.44	790.1	-197.47	-11611.5

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1					265.58	
	2	1					208.40	
	2	2					181.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Weather								
Average Unit Wt.								
Below	1	1					265.58	
	2	1					208.40	
	2	2					181.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Below								
Average Unit Wt.								
Total Container								

Condition:- (No Boxes)
NONE Cargo
10% Consumables
8'-3" Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/s
Lightship	12118	35.36	428493	-38.33	-464483	
Crew & Effects	10	75.00	750	-100.00	-1000	
Stores	8	47.00	376	-271.50	-2172	
Lube Oil	98	36.83	3610	-287.26	-28152	577.03
Diesel Oil	3	40.00	120	-300.51	-902	52.26
Salt Water Ballast	3391	12.12	41098	100.05	339284	
Fuel Oil	673	25.07	16871	82.20	55321	4492.63
Fresh Water	59	13.44	790	-197.47	-11612	4062.17
Containers						
Subtotal	16360	30.08	492108	-6.95	-113716	9184.09
Upper Stabilization Tank	256	32.53	8328	-75.39	-19300	21338.00
Lower Stabilization Tank	252	17.58	4498	-75.39	-18998	18945.00
Total	16868	29.93	504934	-9.01	-152014	49467.09

11.0 / 11.0 } Liquid Level in Tank (Feet)

	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	16.35	Ft.	16.80	Ft.
KM	47.20	Ft.	46.60	Ft.
VCG	30.08	Ft.	29.93	Ft.
GM KM-VCG	17.12	Ft.	16.67	Ft.
Free Surface Corr FS=i/Δ	0.56	Ft.	2.93	Ft.
GM Available = GM-FS	16.56	Ft.	13.74	Ft.
GM Required (Page 9)	—	Ft.	—	Ft.

LCB (-Aft ⊗)	-6.58	Ft.
LCG (-Aft ⊗)	-9.01	Ft.
Trim Lever TL LCB-LCG	2.43	Ft.
MT1"	2956	Ft.-Tons
Trim T = Δ x TL/MT1" (+ by stern)	13.87	In.
LCF (-Aft ⊗)	-8.3	Ft.
Aft Draft Change ha=T(.5-LCF/LBP)	7.11	In.
Fwd.Draft Change hf=ha-T	-6.76	In.
Draft Aft Ha=Hm+ha	17.39	Ft. 17'-4 3/4"
Draft Fwd. Hf=Hm+hf	16.23	Ft. 16'-2 3/4"

Salt Water Ballast
Fuel Oil
Fresh Water

Condition:
Cargo NONE (NO BOXES)
Consumables 10%
Container Height 8'-3"

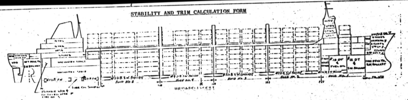
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	1/s	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T. ℄				17.94		283.92	
	1 D.B. ℄				3.40		232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ℄				3.04		73.49	
	3 D.B.P/S				3.47		65.78	
	4 D.B. ℄				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ℄				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total			2864	11.05	31643.5	66.22	189657.7
Fuel Oil	1B D.T. ℄				20.44		251.12	
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S				25.86		-56.49	
	5A W. P				27.01		-106.11	
	5A W. S				27.01		-106.11	
	5B W. P				28.32		-145.92	
	5B W. S				28.32		-145.92	
	F.O.Set.P				32.15		-176.26	
	F.O.Set.S				32.15		-176.26	
	Total	5279.71	3364		26.03	87564.8	44.11	148579.8
Fresh Water	F.W.D.B.S	1123.49		26	4.02	16	-208.40	
	F.W.D.B.P				3.99		-208.52	
	F.W.D.B.℄				4.04		-263.16	
	P.W. Fwd.				23.50		224.75	
	P.W. ℄				35.25		-286.50	
	D.W. Fwd.				36.20		-282.68	
	D.W. Aft				36.49		-291.34	
	Total	2588.51		295	15.30	4512.7	-262.76	-77515.2

Container Cargo Plus Containers	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1					265.58	
	2	1					208.40	
	2	2					181.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Weather								
Average Unit Wt.								
Below	1	1					265.58	
	2	1					208.40	
	2	2					181.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Below								
Average Unit Wt.								
Total Container								

Condition:- (No Boxes)
NONE Cargo
50% Consumables
Container Height

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/s
Lightship	12118	35.36	428493	-38.33	-464483	
Crew & Effects	10	75.00	750	-100.00	-1000	
Stores	38	47.00	1786	-271.50	-10317	
Lube Oil	98	36.83	3610	-287.26	-28152	577.03
Diesel Oil	14	40.00	560	-300.51	-4207	52.26
Salt Water Ballast	2864	11.05	31644	66.22	189658	
Fuel Oil	3364	26.03	87565	44.11	148380	5279.71
Fresh Water	294	15.30	4512	-262.76	-77515	2588.51
Containers						
Subtotal	18800	29.73	558921	-13.17	-247636	8497.51
Upper Stabilization Tank	256	32.53	8328	-75.39	-19300	21338.00
Lower Stabilization Tank	252	17.58	4430	-75.39	-18998	18945.00
Total	19308	29.61	571679	-14.81	-285934	48780.51

11.0 / 11.0 } Liquid Level in Tank (Feet)

	Without Stabl. Tks.		With Stabl. Tks.	
Mean Draft H_m	18.42	Ft.	18.80	Ft.
KM	44.65	Ft.	44.22	Ft.
VCG	29.73	Ft.	29.61	Ft.
GM KM-VCG	14.92	Ft.	14.61	Ft.
Free Surface Corr FS=i/Δ	0.45	Ft.	2.53	Ft.
GM Available = GM-FS	14.47	Ft.	12.08	Ft.
GM Required (Page 9)	—	Ft.	—	Ft.

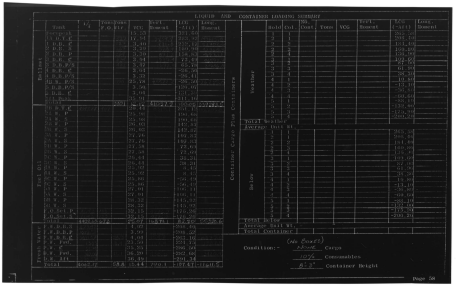
LCB (-Aft ⊗)	-6.87	Ft.
LCG (-Aft ⊗)	-14.81	Ft.
Trim Lever TL LCB-LCG	7.94	Ft.
MT1"	3020	Ft.-Tons
Trim T = Δ x TL/MT1" (+ by stern)	50.76	In.
LCF (-Aft ⊗)	-9.65	Ft.
Aft Draft Change ha=T(.5-LCF/LBP)	26.10	In.
Fwd.Draft Change hf=ha-T	-24.66	In.
Draft Aft Ha=Hm+ha	20.98	Ft. 20'-11 3/4"
Draft Fwd. Hf=Hm+hf	16.75	Ft. 16'-9"

Salt Water Ballast
Fuel Oil
Fresh Water

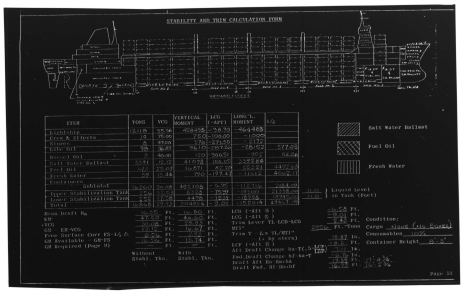
Condition:
Cargo NONE (NO BOXES)
Consumables 50%
Container Height 8'-3"

4-4639.111.13-6
Alt-
H-9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

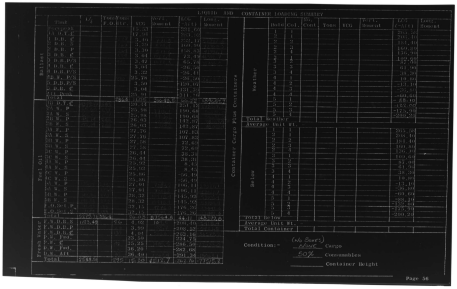
H-4639-M-136
Alt-
H-9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X


LIQUID AND CONTAINER LOADING SUMMARY

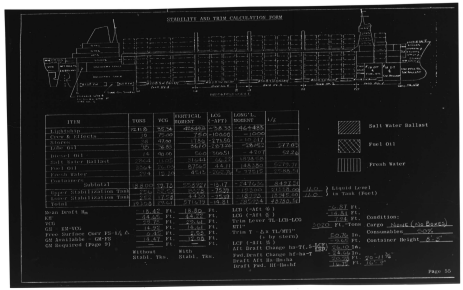
Page 36


STABILITY AND TRIM CALCULATION FORM

Page 35


LIQUID AND CONTAINER LOADING SUMMARY

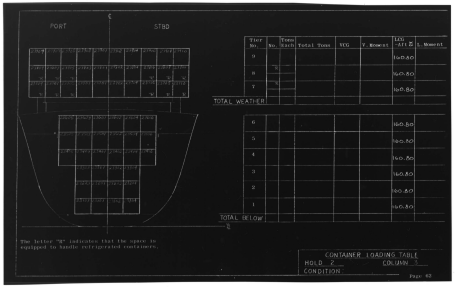
Page 38

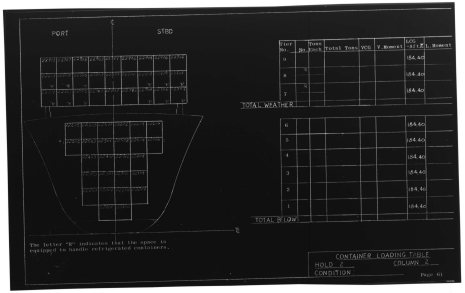

STABILITY AND TRIM CALCULATION FORM

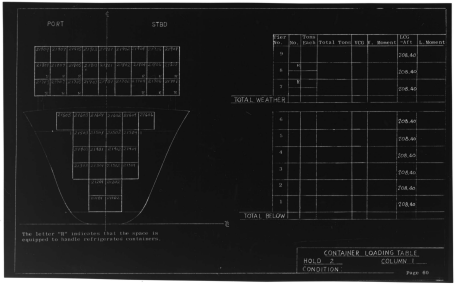
Page 37

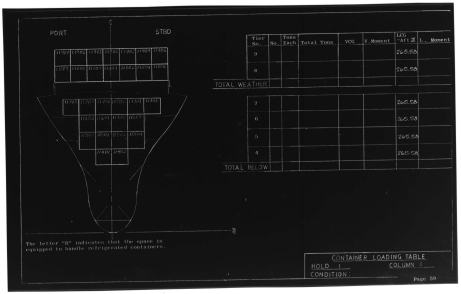
H-4639.111.13-6
Alt-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



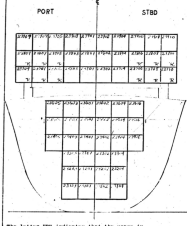






BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X
AIR-
H-9

PORT STBD



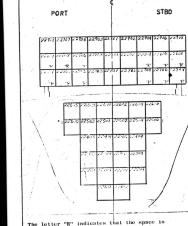
Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG ~AFT	L. Moment
9						140.80	
8						140.80	
7						140.80	
TOTAL WEATHER							
6						140.80	
5						140.80	
4						140.80	
3						140.80	
2						140.80	
1						140.80	
TOTAL BELOW							

The letter "R" indicates that the space is equipped to handle refrigerated containers.

CONTAINER LOADING TABLE
HOLD 2 COLUMN 3
CONDITION:

Page 02

PORT STBD



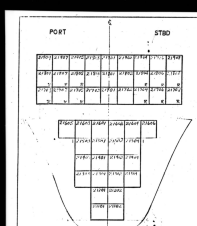
Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG ~AFT	L. Moment
9						184.40	
8						184.40	
7						184.40	
TOTAL WEATHER							
6						184.40	
5						184.40	
4						184.40	
3						184.40	
2						184.40	
1						184.40	
TOTAL BELOW							

The letter "R" indicates that the space is equipped to handle refrigerated containers.

CONTAINER LOADING TABLE
HOLD 2 COLUMN 2
CONDITION:

Page 01

PORT STBD



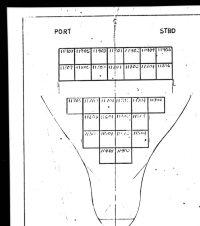
Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG ~AFT	L. Moment
9						208.40	
8						208.40	
7						208.40	
TOTAL WEATHER							
6						208.40	
5						208.40	
4						208.40	
3						208.40	
2						208.40	
1						208.40	
TOTAL BELOW							

The letter "R" indicates that the space is equipped to handle refrigerated containers.

CONTAINER LOADING TABLE
HOLD 2 COLUMN 1
CONDITION:

Page 00

PORT STBD



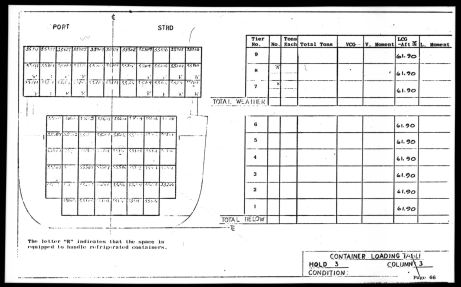
Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG ~AFT	L. Moment
9						245.50	
8						245.50	
TOTAL WEATHER							
7						245.50	
6						245.50	
5						245.50	
4						245.50	
TOTAL BELOW							

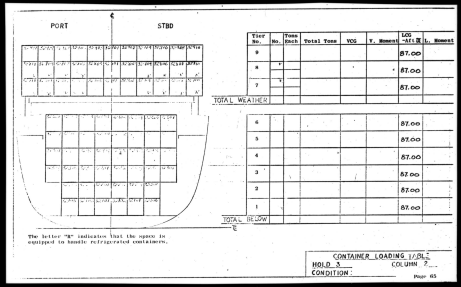
The letter "R" indicates that the space is equipped to handle refrigerated containers.

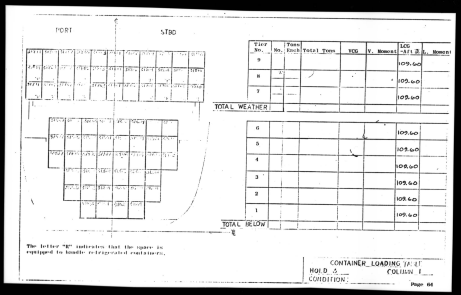
CONTAINER LOADING TABLE
HOLD 1 COLUMN 1
CONDITION:

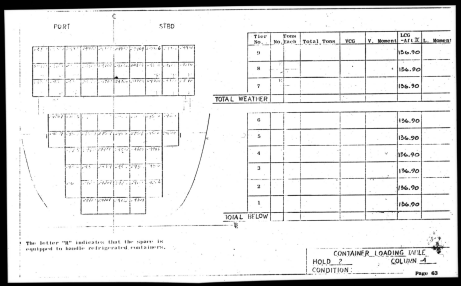
Page 99

H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X
H-9
Alt-



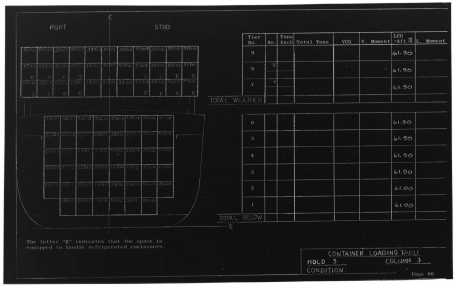


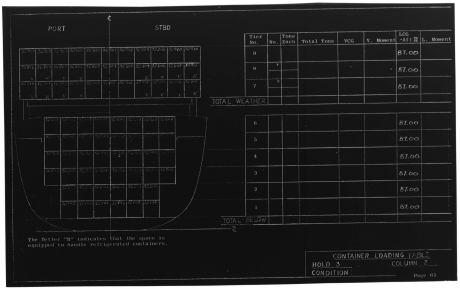


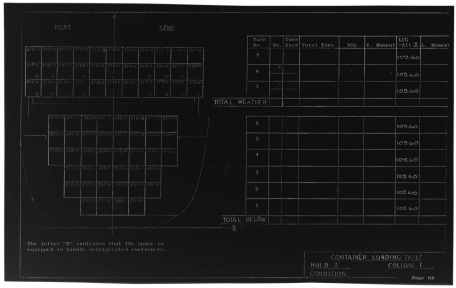


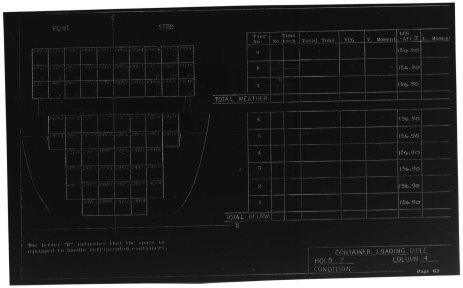
H-4639.111-13-6
Alt.-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X









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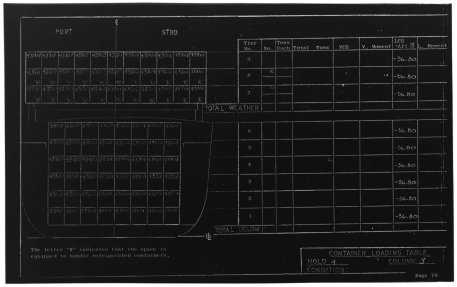
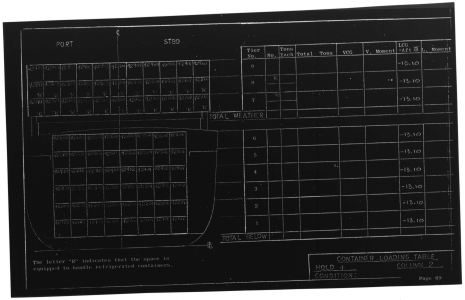
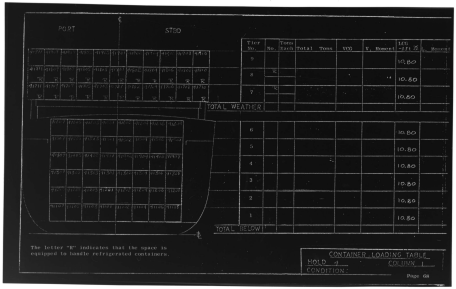
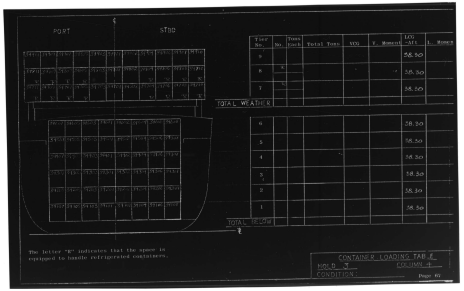
Alt-
H-9

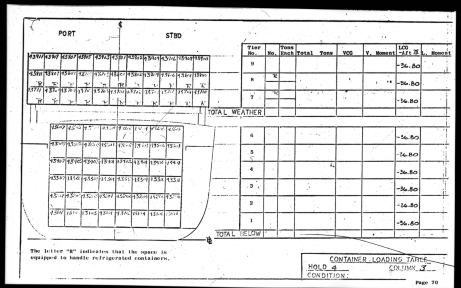
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

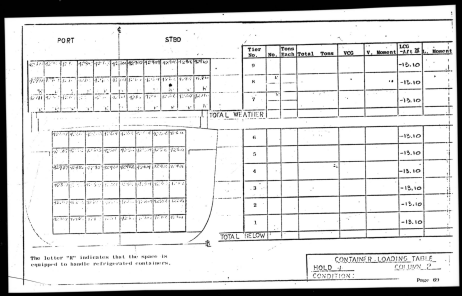


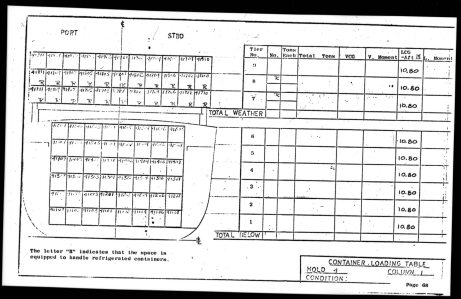


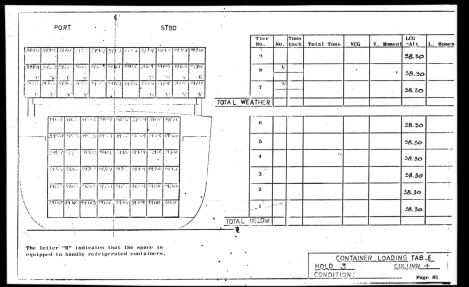





PORT
STBD
TOTAL WEATHER
TOTAL BELOW
The letter "R" indicates that the space is equipped to handle refrigerated containers.
CONTAINER LOADING TABLE
HOLD 4
COLUMN 3
CONDITION:
Page 70

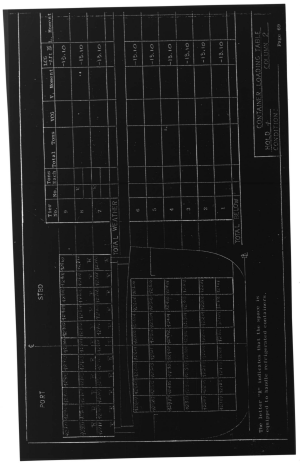

PORT
STBD
TOTAL WEATHER
TOTAL BELOW
The letter "R" indicates that the space is equipped to handle refrigerated containers.
CONTAINER LOADING TABLE
HOLD 3
COLUMN 2
CONDITION:
Page 69

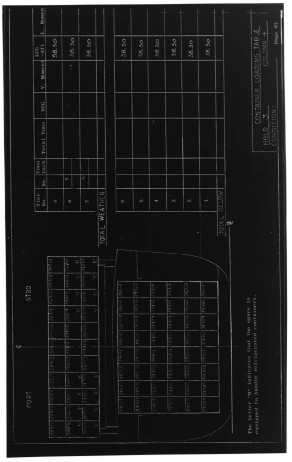

PORT
STBD
TOTAL WEATHER
TOTAL BELOW
The letter "R" indicates that the space is equipped to handle refrigerated containers.
CONTAINER LOADING TABLE
HOLD 4
COLUMN 1
CONDITION:
Page 68

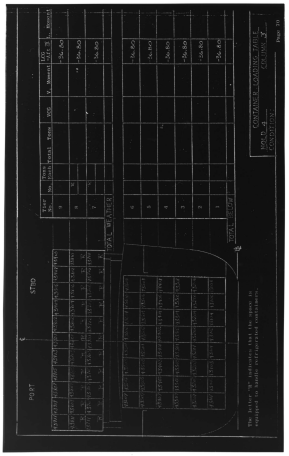

PORT
STBD
TOTAL WEATHER
TOTAL BELOW
The letter "R" indicates that the space is equipped to handle refrigerated containers.
CONTAINER LOADING TABLE
HOLD 2
COLUMN 3
CONDITION:
Page 67

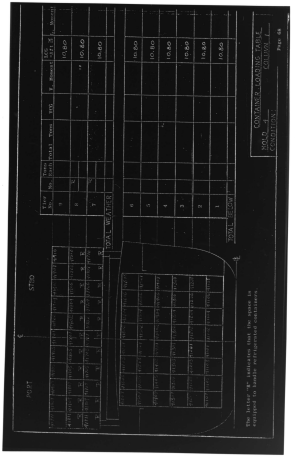
H-4639-III-13-6
Alt.-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

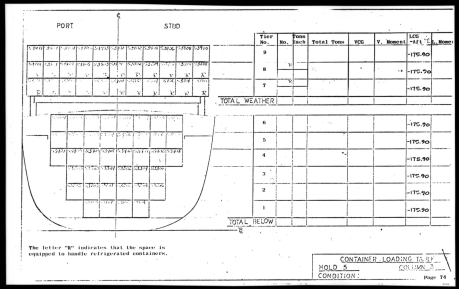


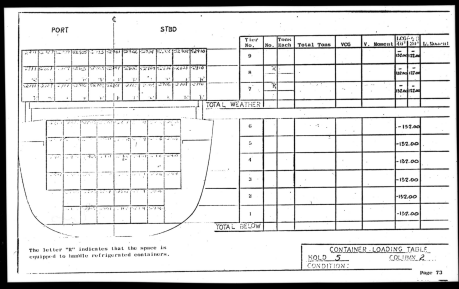


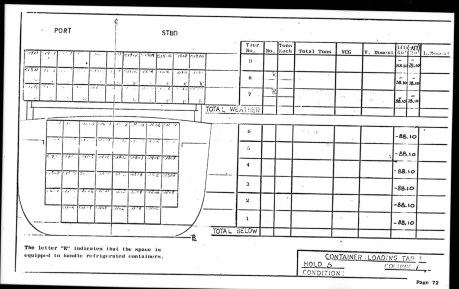


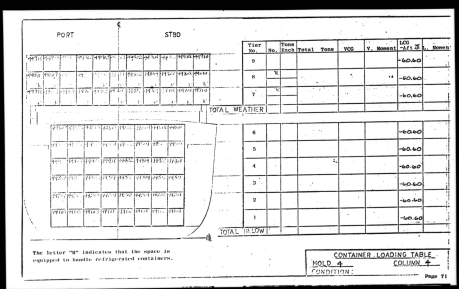


BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X
H-6



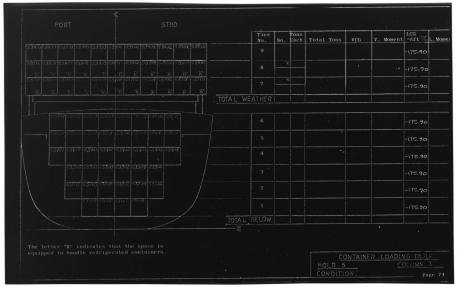


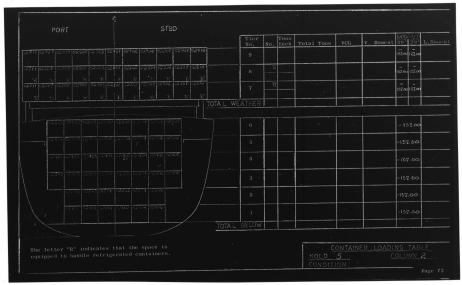


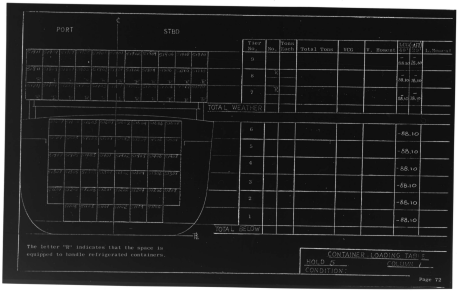


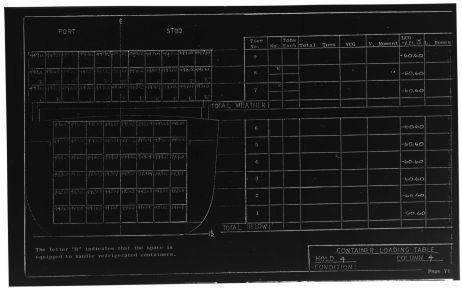
H-4639.111.13-6
Alt-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



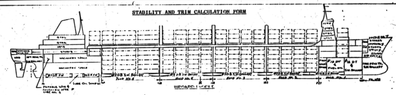






SHORT FORM

STABILITY AND TRIM CALCULATION FORM



ITEM	TONS	VCG	VERTICAL MOMENT	LCG (-AFT)	LONG'L. MOMENT	i/δ
Lightship	12118	35.36	428498	-38.33	-464483	
Crew & Effects	10	75.00	750	-100.00	-1000	
Stores		47.00		-271.50		
Lube Oil	98	36.82	2610	-287.26	-28152	577.03
Diesel Oil		40.00		-300.51		
Salt Water Ballast						
Fuel Oil						
Fresh Water						
Containers						
Subtotal						
Upper Stabilization Tank				-75.39		
Lower Stabilization Tank				-75.39		
Total						

Salt Water Ballast

Fuel Oil

Fresh Water

_____) Liquid Level
_____) in Tank (Feet)

	Without Stabl. Tks.	With Stabl. Tks.
Mean Draft H_m	____ Ft.	____ Ft.
KM.	____ Ft.	____ Ft.
VCG	____ Ft.	____ Ft.
GM = KM-VCG	____ Ft.	____ Ft.
Free Surface Corr FS-i/δ △	____ Ft.	____ Ft.
GM Available = GM-FS	____ Ft.	____ Ft.
GM Required (Page 9)	____ Ft.	____ Ft.

LCB (-Aft ⊗)	____ Ft.
LCG (-Aft ⊗)	____ Ft.
Trim Lever TL LCB-LCG	____ Ft.
MT1"	____ Ft.-Tons
Trim T △x TL/MT1" (+ by stern)	____ In.
LCF (-Aft ⊗)	____ Ft.
Aft Draft Change ha-T(.5-LCF/LBP)	____ In.
Fwd.Draft Change hf ha-T	____ In.
Draft Aft Ha Hm+ha	____ Ft.
Draft Fwd. Hf Hm-hf	____ Ft.

Condition:
Cargo ________
Consumables ________
Container Height ________

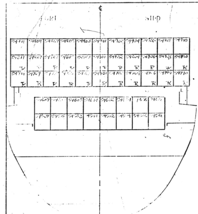
LIQUID AND CONTAINER LOADING SUMMARY

	Tank	i/δ	Tons F.O.	Tons Wtr.	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Ballast	Forepeak				15.53		321.60	
	1A D.T.℄				17.94		283.92	
	1 D.B. ℄				3.40		232.17	
	2 D.B. S				3.29		160.90	
	2 D.B. P				3.30		158.83	
	3 D.B. ℄				3.04		73.49	
	3 D.B.P/S				3.47		65.78	
	4 D.B. ℄				3.04		-26.50	
	4 D.B.P/S				3.32		-26.41	
	4B W. P/S				25.78		-26.50	
	5 D.B.P/S				3.50		-120.07	
	5 D.B. ℄				3.04		-131.39	
	Aft Peak				35.91		-311.16	
	Total							
Fuel Oil	1B D.T.℄				20.44		251.12	
	2A W. P				25.98		190.68	
	2A W. S				25.98		190.68	
	2B W. P				26.03		142.87	
	2B W. S				26.03		142.87	
	3A W. P				27.76		107.83	
	3A W. S				27.76		107.83	
	3B W. P				27.58		72.69	
	3B W. S				27.58		72.69	
	3C W. P				26.44		38.31	
	3C W. S				26.44		38.31	
	4A W. P				25.92		8.45	
	4A W. S				25.92		8.45	
	4C W. P				25.86		-56.49	
	4C W. S				25.86		-56.49	
	5A W. P				27.01		-106.11	
	5A W. S				27.01		-106.11	
	5B W. P				28.32		-145.92	
	5B W. S				28.32		-145.92	
	F.O.Set.P				32.15		-176.26	
	F.O.Set.S				32.15		-176.26	
	Total							
Fresh Water	F.W.D.B.S				4.02		-208.40	
	F.W.D.B.P				3.99		-208.52	
	F.W.D.B.℄				4.04		-263.16	
	D.W. Fwd.				23.50		-224.75	
	P.W. ℄				35.25		-286.50	
	D.W. Fwd.				36.20		-282.68	
	D.W. Aft				36.49		-291.34	
	Total							

Container Cargo Plus Containers

	Hold	Col.	No. Cont.	Tons	VCG	Vert. Moment	LCG (-Aft)	Long. Moment
Weather	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1						
	5	2						
	5	3					-175.90	
	5	4					-200.20	
Total Weather								
Average Unit Wt.								
Below	1	1					265.58	
	2	1					208.40	
	2	2					184.40	
	2	3					160.80	
	2	4					136.90	
	3	1					109.60	
	3	2					87.00	
	3	3					61.90	
	3	4					38.30	
	4	1					10.80	
	4	2					-13.10	
	4	3					-36.80	
	4	4					-60.60	
	5	1					-88.10	
	5	2					-132.00	
	5	3					-175.90	
	5	4					-200.20	
Total Below								
Average Unit Wt.								
Total Container								

Condition:- ________ Cargo
________ Consumables
________ Container Height

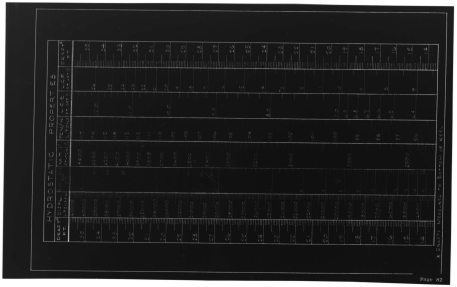


Tier No.	No.	Tons Each	Total Tons	VCG	V. Moment	LCG -Aft ⊗	L.Moment
9						-200.20	
8	R					-200.20	
7	R					-200.20	
TOTAL WEATHER							
6						-200.20	
5						-200.20	
TOTAL BELOW							

The letter "R" indicates that the space is equipped to handle refrigerated containers.

CONTAINER LOADING TABLE
HOLD 5 COLUMN 4
CONDITION:

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X
H-4639.111.13-6
Alt-
H-9



BASIC SHIP WEIGHT

	L. Tons	W.T.	V. Moment	LCG (-Aft)	L. Moment
Light Ship	17138	35.36	6284903	- 36.33	- 464863
Trim & Effect	10	21.00	2100	100.00	- 1000
Std Consumable Stores[1]	40	41.00	1640	-221.50	- 10460
Std Consumable Stores	40	47.00	1881	-221.50	- 8285
Lube Oil[2]	125	37.66	4708	-240.62	- 31478
Diesel Oil	26	85.00	1105	-259.50	- 6153.5
Basic Ship	17343	35.89	622992	- 42.60	- 525779.5

1. Assume 75 tons of stores of which 40 tons is non-consumable.

2. Lube oil includes combined operating capacities of storage tank, settler tank, gravity tank, and sump.

7. With the Displacement and Available GM without stabilization tanks known, refer to the Flume Stabilization System Operating Instruction Manual to find the amount of stabilization tanks to be used and the percentage of capacity to which to trim the tons of ballast in the tanks for zero trim and level. Enter the tons in each stabilization tank on the Displacement table and find the Total Displacement.

10. Now return to the Z - monographs and find new stability factors based on the Total Displacement and the tons of ballast in each tank. Tabulate the algebraic sum of these tons for stations and enter in the appropriate space in the Stability table.

11. To find the effect of the stabilization tanks on GM go to the Z - monograph on page 86 - lay a straight edge across the Tons In for Light Sand and the Total Displacement and read the GM Correction for each weight band scale. The GM Corrections for each tank must be found separately and entered in the Stability Table.

12. The algebraic sum of the GM of Basic Ship, Stability Factor of DWT and the GM Corrections for stabilization tanks is the Available GM. The Required GM is found on page 29.

INSTRUCTIONS FOR FIGURING STABILITY USING SHORT FORM

GENERAL NOTES

1. This Booklet contains a simplified means of determining the Stability Factor for various conditions of weight loading. Pages 83 & 84 below explain the computations for this method. For information on use of the instructions see the TYPE END STABILITY BOOK.

2. The Basic Ship #1 on page 81 includes an allowance for slack tank free surface for each type of consumable liquid (see Instruction No. 2 of TYPE END STABILITY BOOK). Consumable fuel tanks are assumed 98% full. Any additional free surface allowance that need be made when using this form (when additional tanks are slack, beyond those permitted by Instruction No. 2.

3. The Total Displacement computed on page 85 will not necessarily agree exactly with the displacement obtained by the Displacement Curves (found by the "Long Form" TRIM AND STABILITY BOOK), because of minor variations between actual and assumed values of items contained in the Ship Weight.

4. A GM Available less than GM Required indicates insufficient stability. Such a condition may be corrected by ballasting tanks to any zone having a positive stability factor.

INSTRUCTIONS FOR USE OF SHORT FORM (See sample on Pages 88 & 89).

1. Enter the tons of cargo carried in each hold on the Sectional Loading table, page 88. Then sum to find the total tons of cargo in each container tier.

2. Enter the total of each container tier in the appropriate zone, on the Short Form Calculation table, page 85. Also enter the tons of all liquids carried in the proper zones. Sum totals. On fueling ships don't fuel all tiers in a zone then approximately for zone vertical center of gravity.

3. Add the tons in Zones 1 through 10 and enter the totals in the Deadweight table.

4. Sum the zone weights to give the Deadweight. Enter the Deadweight in the Displacement table and add to the Basic Ship Weight to give Sub-Total (displacement weight). Weight of ballast in stabilization tanks, if used.

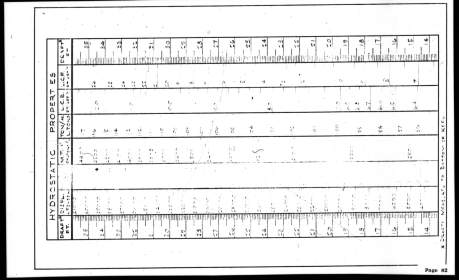
5. On page 82 lay a transparent straight edge across the Displacement Scale in Sub Sand column. Read the Stability Factor for each zone and enter in the appropriate spaces on the Short Form Calculation table in the column headed "Without Stab. Tanks".

6. Now that the Displacement is known, the Stability Factors in the Deadweight table can be found. Turn to page 83 to obtain this information in the form of Z - monographs. Lay a transparent straight edge across the Long Tons Loaded in Zone 8 and the Total Displacement and read the Total Displacement (diagonal) scale. Then lay the straight edge on each found scale read the Stability Factor for Zone 8 in this case a negative number). Enter this value in the column marked "w/o Stab. Tks" in the Deadweight table. Do this for Zones 1 through 10.

7. Calculate the algebraic sum of the Stability Factors in the Deadweight table. This is the Stability Factor of Deadweight. Enter this value in the appropriate space in the Stability table.

8. The algebraic sum of the GM of Basic Ship and Stability Factor of DWT is the Available GM without stabilization tanks. The Required GM is found from the curve on page 29.

H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X



BASIC SHIP WEIGHT

	L. Tons	Wt.	V. Moment	LCG (-Aft)	L. Moment
Light Ship	17118	35.36	4294953	- 34.33	- 464843
Crew & effects	18	75.00	720	-277.50	- 10800
Non-Consum. Stores[1]	66	47.90	1901	-277.50	- 6245
2/3 Consum. Stores	23	47.90	4736	-206.62	- 33078
Lube Oil[2]	125	57.66	1061	-300.56	- 8132.5
Diesel Oil	21	59.00			
Basic Ship	12343	35.49	437992	- 62.60	- 532779.5

1 Assume 75 tons of stores of which 40 tons is non-consumable.

2 Lube oil includes combined operating capacities of storage tank, settler tank, gravity tank, and sump.

9. With the Displacement and Available GM without stabilization tanks known, refer to the Flume Stabilization System Operating Instruction Manual for the number of stabilization tanks to be used and the operating level of each. Page 9a gives the capacity of the tanks in terms of inches in the bowl. Enter the tons in each stabilization tank in the Displacement table and find the Total Displacement.

10. Now return to the Z - nomographs and find new stability factors based on the Total Displacement and enter in the Deadweight table. Calculate the GM and the new stability factors and enter in the appropriate space in the Stability table.

11. To find the effect of the stabilization tanks on GM go to the Z - nomograph on page 9b. Lay a straight edge across the Tons lbs (left hand scale) and Total Displacement and read the GM Correction for Free Surface (left hand scale). The GM Corrections for each tank in either the operating condition or 100% full must be found separately and entered in the Stability Table.

12. The algebraic sum of the GM of Basic Ship, Stability Factor of DWT and the GM Corrections for the stabilization tanks is the Available GM. The Required GM is found on page 10.

INSTRUCTIONS FOR FIGURING STABILITY USING SHORT FORM

GENERAL NOTES

1. This Booklet contains a simplified means of determining available GM and Mean Draft at various conditions of vessel loading. The instructions below explain the computations for this method. For more complete details, see these instructions near the TRIM AND STABILITY BOOK.

2. The Basic Ship KG on page 81 includes an allowance for slack tank free surface for each type of vessel. Therefore, no free surface is to be used in the SHORT STABILITY BOOK. All other fuel tanks are assumed 98% full. No additional free surface correction need be made when using this form unless additional tanks are slack, beyond those permitted by Instruction No. 3.

3. The Total Displacement computed on page 83 will not necessarily agree exactly with the displacement obtained for the same condition worked out by the "Long Form (TRIM AND STABILITY BOOK)" because of minor variations between actual and assumed values of items contained in Basic Ship Weight.

4. A GM Available less than GM Required indicates insufficient stability. Such a condition may be corrected by ballasting tanks in any zone having a positive stability factor.

INSTRUCTIONS FOR USE OF SHORT FORM (See sample cal. Pages 84 & 85)

1. Enter the tons of cargo carried in each hold on the Container Loading table, page 84. Then sum to find the total tons of cargo in each container tier.

2. Enter the total of each container tier in the appropriate zones on the Short Form Calculation table, page 85. Also enter the tons of all liquids carried in the zones on page 85. Note that the loading does such that all items in a zone have approximately the same vertical center of gravity.

3. Add the tons in Zones 1 through 10 and enter the totals in Deadweight table.

4. Sum the zone weights to give the Deadweight. Enter the Deadweight in the Displacement table and add to the Basic Ship Weight to give Sub-Total (displacement less weight of ballast in stabilization tanks, if any).

5. On page 82 lay a transparent straight edge across the Displacement Scale and the Mean Draft and read off the Mean Draft and the Basic Ship GM and enter in the Basic Ship column on the Short Form Calculation table in the column headed "Without Stab. Tanks".

6. Now that the Displacement is known, the Stability Factors in the Deadweight table can be found. Enter the Displacement on the Displacement Scale of the Z - nomographs. For example, on page 9G (which applies to Zone 8) lay a transparent straight edge across the Long Tons Loaded in Zone 8 (left hand scale) and across the Total Displacement and read off the GM Correction (center right hand scale) read the Stability Factor for Zone 8 (in this case a negative number). Enter this value in the column marked "w/o Stab. Tks" in the Deadweight table. Do this for Zones 1 through 10.

7. Calculate the algebraic sum of the Stability Factors in the Deadweight table. This is the Stability Factor of Deadweight. Enter this value in the appropriate space in the Stability table.

8. The algebraic sum of the GM of Basic Ship and Stability Factor of DWT is the Available GM without stabilization tanks. The Required GM is found from the curve on page 79.

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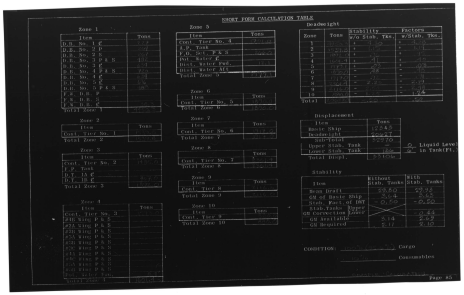

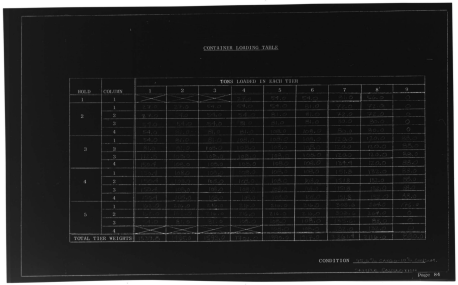

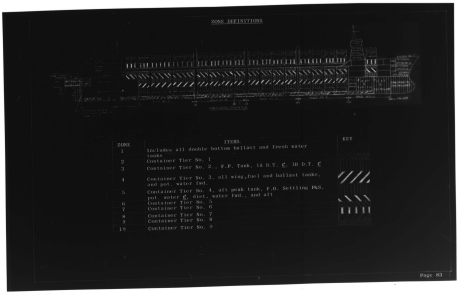

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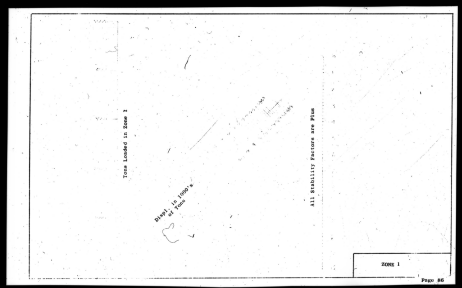

Page 86

SHORT FORM CALCULATION TABLE

Zone 1

Item	Tons
D.B. No. 1 C	
D.B. No. 2 P	
D.B. No. 3 S	
D.B. No. 4 P & S	
D.B. No. 5 C	
D.B. No. 6 P & S	
D.B. No. 7 P & S	
D.B. No. 8 C	
D.B. No. 9 P & S	
D.B. No. 10 C	
F.P. D.B. P	
F.P. D.B. S	
F.P. D.B. C	
Total Zone 1	

Zone 2

Item	Tons
Cont. Tier No. 1	
Total Zone 2	

Zone 3

Item	Tons
Cont. Tier No. 2	
F.P. Tank	
F.O. 1S C	
D.T. 1S C	
Total Zone 3	

Zone 4

Item	Tons
Cont. Tier No. 3	
#1S Wing P & S	
#2S Wing P & S	
#3S Wing P & S	
#5S Wing P & S	
#6S Wing P & S	
#7S Wing P & S	
#8S Elec. P & S	
#9S Elec. P & S	
#10S Elec. P & S	
#11S Elec. P & S	
#12S Elec. P & S	
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Zone 5

Item	Tons
Cont. Tier No. 4	
A.P. Tank	
F.O. Settl. P & S	
Dist. Water Fwd.	
Dist. Water Aft	
Total Zone 5	

Zone 6

Item	Tons
Cont. Tier No. 5	
Total Zone 6	

Zone 7

Item	Tons
Cont. Tier No. 6	
Total Zone 7	

Zone 8

Item	Tons
Cont. Tier No. 7	
Total Zone 8	

Zone 9

Item	Tons
Cont. Tier 8	
Total Zone 9	

Zone 10

Item	Tons
Cont. Tier 9	
Total Zone 10	

Deadweight

Zone	Tons	Stability w/o Stab. Tks.	Stability w/Stab. Tks.	Factors w/Stab. Tks.
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Displacement

Item	Tons
Hull & Ship	
Deadweight	
Sub-Total	
Upper Stab. Tank	
Lower Stab. Tank	
Total Displ.	

@ Liquid Level in Tank(Ft.)

Stability

Item	Without Stab. Tanks	With Stab. Tanks
Mean Draft		
GM of Basic Ship		
Stab. Fact. of GM		
Stab. Tanks Upper		
Stab. Tanks Lower		
GM Available		
GM Required		

CONDITION: _____ Cargo

Consumables

Page 85

CONTAINER LOADING TABLE

HOLD	COLUMN	TONS LOADED IN EACH TIER → 1	2	3	4	5	6	7	8	9
1	1									
	2									
2	3									
	4									
	1									
3	2									
	3									
	4									
	1									
4	2									
	3									
	4									
	1									
5	2									
	3									
TOTAL TIER WEIGHTS										

CONDITION _____

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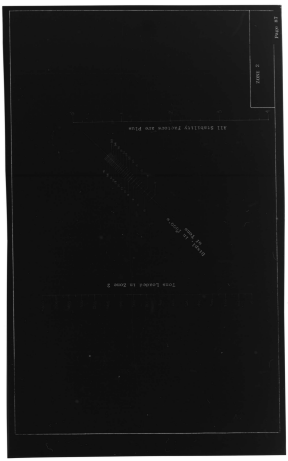
ZONE DEFINITIONS

KEY

ZONE	ITEMS
1	Includes all double bottom ballast and fresh water tanks
2	Container Tier No. 1
3	Container Tier No. 2, F.P. Tank, 1A D.T. C, 1S D.T. C
4	Container Tier No. 3, all wing fuel and ballast tanks, and pot. water tnd.
5	Container Tier No

H-4639-11-13-6
Alt.-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



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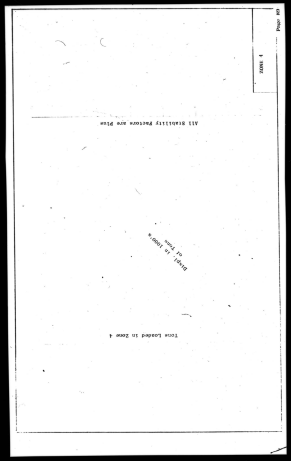
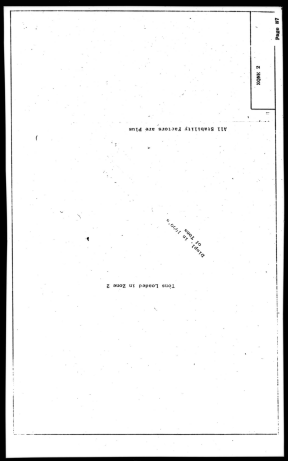
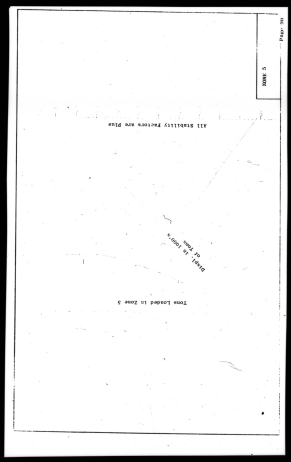
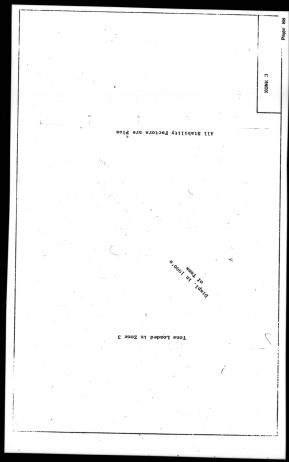


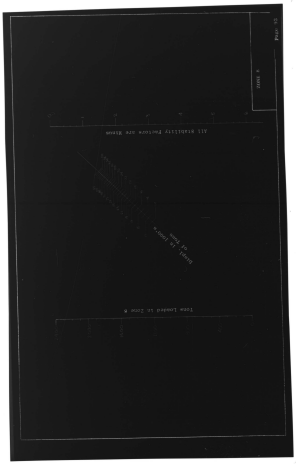


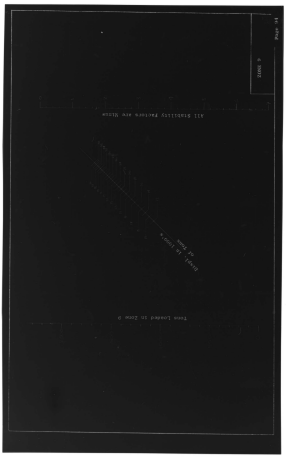


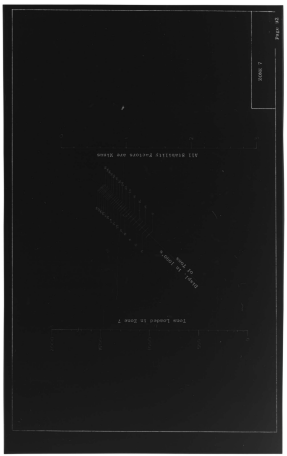


H-4639-III-13-6
Alt-
H-9

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 6X

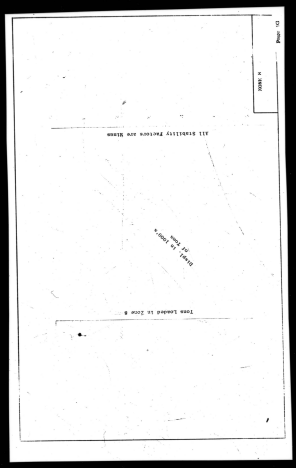


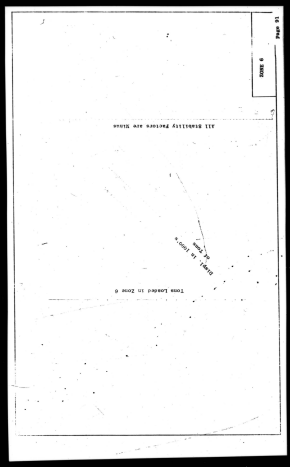


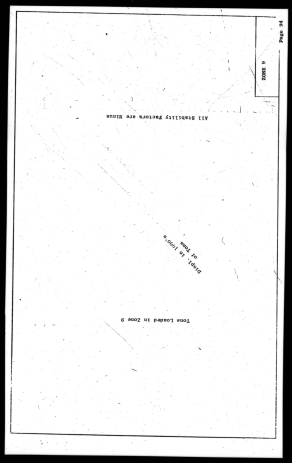


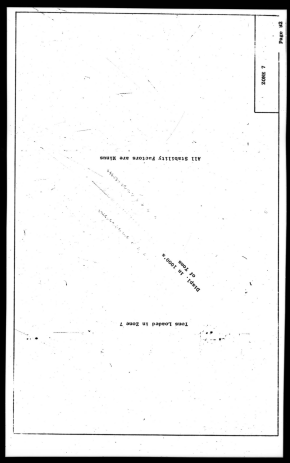
H-4639-111-13-6
Alt.-
H-9

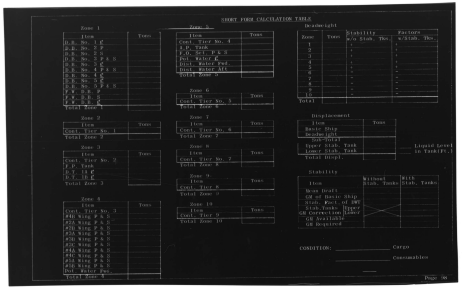
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

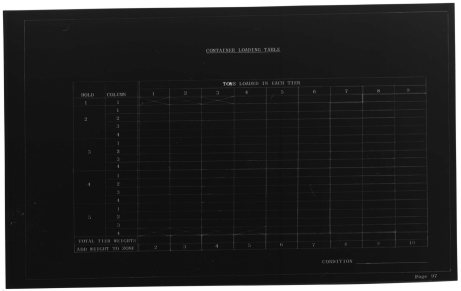


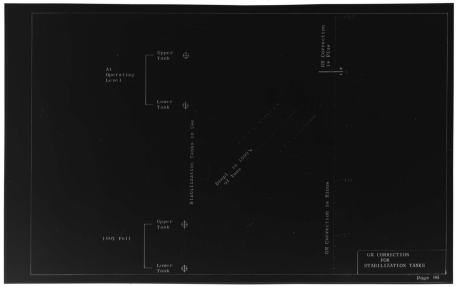












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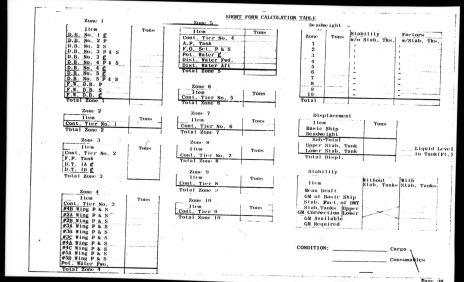
Alt-
H-9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

H-4639-4640
H-9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



SHORT FORM CALCULATION TABLE

Zone 1

Item	Tons
D.B. No. 1 C	
D.B. No. 2 C	
D.B. No. 2 S	
D.B. No. 3 P & S	
D.B. No. 4 C	
D.B. No. 4 P & S	
D.B. No. 5 C	
D.B. No. 5 P & S	
F.P. D.B. P	
F.P. D.B. S	
F.P. D.B. C	
Total Zone 1	

Zone 2

Item	Tons
Cont. Tier No. 1	
Total Zone 2	

Zone 3

Item	Tons
Cont. Tier No. 2	
F.P. Tank	
D.T. 1S C	
D.T. 1S C	
Total Zone 3	

Zone 4

Item	Tons
Cont. Tier No. 3	
#1S Wing P & S	
#2S Wing P & S	
#3S Wing P & S	
#4S Wing P & S	
#5C Wing P & S	
#4A Wing P & S	
#3C Wing P & S	
#2C Wing P & S	
#1C Wing P & S	
Fwd. Water Pen.	
Total Zone 4	

Zone 5

Item	Tons
Cont. Tier No. 4	
F.P. Tank	
D.T. 2S C	
Fwd. Water Pen.	
Total Zone 5	

Zone 6

Item	Tons
Cont. Tier No. 5	
Total Zone 6	

Zone 7

Item	Tons
Cont. Tier No. 6	
Total Zone 7	

Zone 8

Item	Tons
Cont. Tier No. 7	
Total Zone 8	

Zone 9

Item	Tons
Cont. Tier 8	
Total Zone 9	

Zone 10

Item	Tons
Cont. Tier 9	
Total Zone 10	

Deadweight

Zone	Tons	Stability w/o Stab. Tks.	Factors w/Stab. Tks.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Total			

Displacement

Item	Tons
Basic Ship	
Deadweight	
Upper Stab. Tank	
Lower Stab. Tank	
Total Displ.	

Liquid Level in Tank(Ft.)

Stability

Item	Without Stab. Tanks	With Stab. Tanks
Mean Draft		
GM of Basic Ship		
Stab. Fact. of 1MT		
Stab. Tanks: Upper		
GM Correction Lower		
GM Available		
GM Required		

CONDITION: _____ Cargo
_____ Consumables
_____

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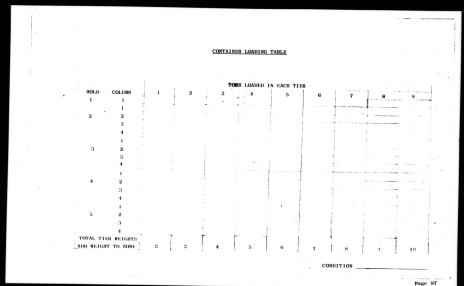

CONTAINER LOADING TABLE

TONS LOADED IN EACH TIER

SOLD	COLUMN	1	2	3	4	5	6	7	8	9
1	1									
	2									
2	1									
	2									
	3									
	4									
3	1									
	2									
	3									
	4									
4	1									
	2									
	3									
	4									
5	1									
	2									
	3									
	4									
TOTAL TIER WEIGHTS										
SIDE WEIGHT TO ZERO		X	X	X	X	X	X	X	X	X

CONDITION _____

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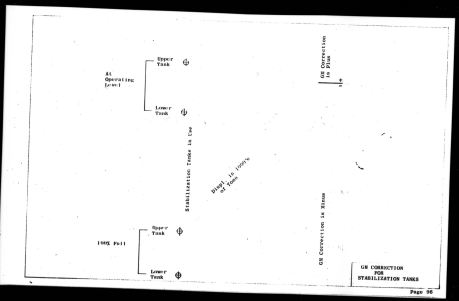

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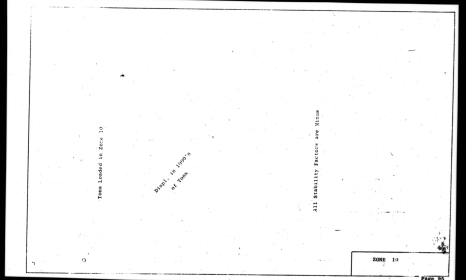

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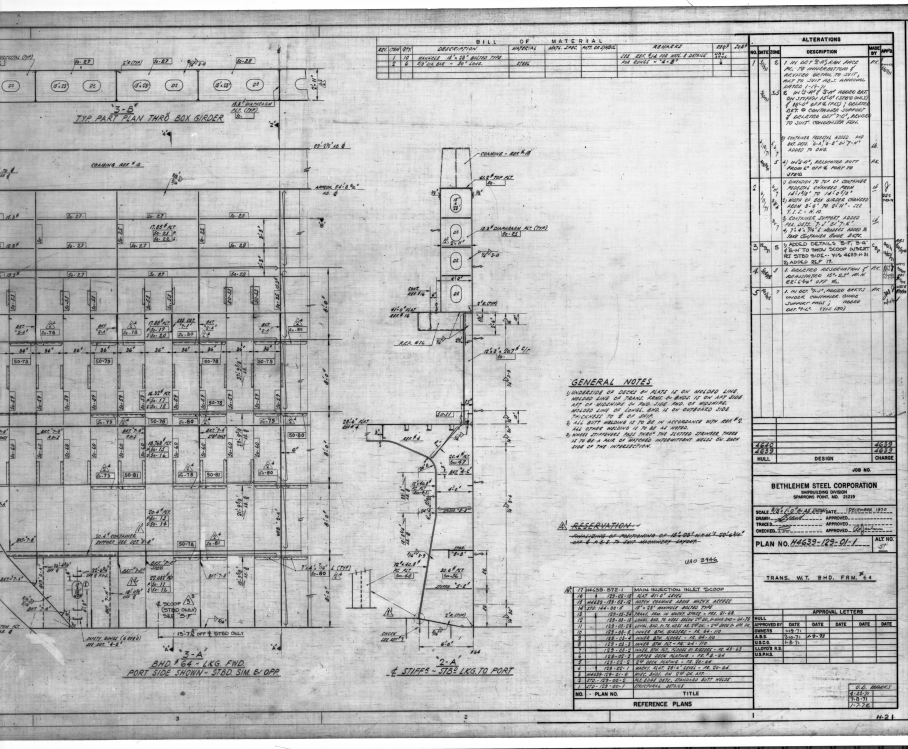

GENERAL NOTES

1. UNDERSIDE OF DECKS BY PLATES IS ON WELDED LINE. WELDED LINE OF TRANS. GIRDER BASES IS ON AFT SIDE AFT OF WELDED LINE OF FWD. SIDE. FWD. OF WELDING WELDED LINE OF CROSS BRS. IS ON OPPOSITE SIDE. ALL LOCATIONS GIVEN TO BE AS ERECTED.
2. ALL BUTT WELDING AT 45 DEG. OR INTERSECTION WITH ONE PLATE MUST BE MADE AS SHOWN.
3. WHERE INTERSECTING PLATES THAT ARE ALSO CUTOUTS OTHERWISE THAN AS TO BE A PART OF MATCHED INTERSECTIONS WELDS SHALL BE MADE SIMILAR TO THE INTERSECTION.

RESERVATION

~~RESERVATION OF PROPERTY OF BETHLEHEM STEEL CORPORATION AND IS TO BE USED ONLY FOR THE PURPOSE FOR WHICH IT IS SUPPLIED~~

USD 2946

NO.	PLAN NO.	TITLE
1	H4639-126-01-1	MAIN SUBSTRUCTURE INLET SCROLL
2	H4639-126-02-1	SCROLL INLET (SHEET)
3	H4639-126-03-1	SCROLL INLET CHANGE AROUND WATER ACCESS
4	H4639-126-04-1	8' x 12' MANHOLE ENCLOSURE
5	H4639-126-05-1	MANHOLE ENCLOSURE - PLAN VIEW
6	H4639-126-06-1	MANHOLE ENCLOSURE - SECTIONS
7	H4639-126-07-1	MANHOLE ENCLOSURE - SECTIONS
8	H4639-126-08-1	MANHOLE ENCLOSURE - SECTIONS
9	H4639-126-09-1	MANHOLE ENCLOSURE - SECTIONS
10	H4639-126-10-1	MANHOLE ENCLOSURE - SECTIONS
11	H4639-126-11-1	MANHOLE ENCLOSURE - SECTIONS
12	H4639-126-12-1	MANHOLE ENCLOSURE - SECTIONS
13	H4639-126-13-1	MANHOLE ENCLOSURE - SECTIONS
14	H4639-126-14-1	MANHOLE ENCLOSURE - SECTIONS
15	H4639-126-15-1	MANHOLE ENCLOSURE - SECTIONS
16	H4639-126-16-1	MANHOLE ENCLOSURE - SECTIONS
17	H4639-126-17-1	MANHOLE ENCLOSURE - SECTIONS
18	H4639-126-18-1	MANHOLE ENCLOSURE - SECTIONS
19	H4639-126-19-1	MANHOLE ENCLOSURE - SECTIONS
20	H4639-126-20-1	MANHOLE ENCLOSURE - SECTIONS
21	H4639-126-21-1	MANHOLE ENCLOSURE - SECTIONS
22	H4639-126-22-1	MANHOLE ENCLOSURE - SECTIONS
23	H4639-126-23-1	MANHOLE ENCLOSURE - SECTIONS
24	H4639-126-24-1	MANHOLE ENCLOSURE - SECTIONS
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98	H4639-126-98-1	MANHOLE ENCLOSURE - SECTIONS
99	H4639-126-99-1	MANHOLE ENCLOSURE - SECTIONS
100	H4639-126-100-1	MANHOLE ENCLOSURE - SECTIONS

REFERENCE PLANS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1		6	1. ADD NOTE "CLEARANCE BASED ON 1/2" OVERCOMPRESSION OF RESILIENT MATERIAL TO 1/8" MINIMUM AFTER COMPLETE REMOVAL OF DEFLECTOR." 2. ADD "1/2" x 3/4" FLANGE BAR ON CYLINDER SUPPORT LOCKING PLATE (SEE DETAIL 7) REQUIRED BOTH TO CONTRACTOR'S CONFIRMATION OF CLEARANCE BETWEEN PIN, REMOVED TO LIMIT TRANSVERSE MOVEMENT.		
		5,6	3. CHANGE PROJECTION ALLOWED FOR BOX GIRDER 0'-4 1/2" & 0'-7 1/2" ADDED TO SHOW.		
		5	4) ADD NOTE "REMOVAL OF PLATE AT WEB & FLANGE PLATE" ON DETAIL		
2		5	1. CHANGE TO 1/2 OF CYLINDER PROJECTION CHANGED FROM 1'-4 1/2" TO 1'-4 1/2" 2. WIDTH OF BOX GIRDER CHANGED FROM 3'-6" TO 3'-6" - 1/2" 3. CYLINDER SUPPORT ADDED FOR SIZE 7'-7 1/2" TO 7'-6". 4. 7'-4 1/2" CYLINDER ADDED TO CYLINDER SUPPORT ADDED.		
3		5	1. ADDED DETAILS 5-7, 5-8 & 5-9 TO SHOW TOP SUPPORT FOR SITED SIZE - WIS. 4639-H-31 & ADDED REF. 71.		
4		5	1. INDICATED RECTANGULAR CYLINDER SUPPORT ON DETAIL 5-7 & 5-9 ADDED REF. 71.		
5		7	1. ADD NOTE "PLUG CONTACT UNDER CYLINDER SUPPORT. CYLINDER SUPPORT PLATE - PLATE BAR 1"x1/2" (PLUG 2946)		

4639			4639
126			126
4640			4640
WELD	DESIGN		CHARGE

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE: 1/4"=1'-0" ON 22"x34" DRAWING — DRAWN: OCTOBER 1970
DRAWN: APPROVED:
TRACED: APPROVED:
CHECKED: APPROVED:

PLAN NO. H4639-126-01-1 — ALT. NO. 5

TRANS. W.T. BND. FRM. #54

APPROVAL LETTERS

APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNER	11-8-71				
A.B.S.	3-20-71	3-24-71			
U.S.C.G.	11-8-71				
LLOYD'S R.S.					
U.S.N.A.					

"SCHOOL SHIP" STBD. SIDE ONLY
PORT SIDE ONLY
STBD. SIDE ONLY

U.S.C.G.	11-8-71
A.B.S.	3-20-71
LLOYD'S R.S.	11-8-71
U.S.N.A.	7-7-76

H-21

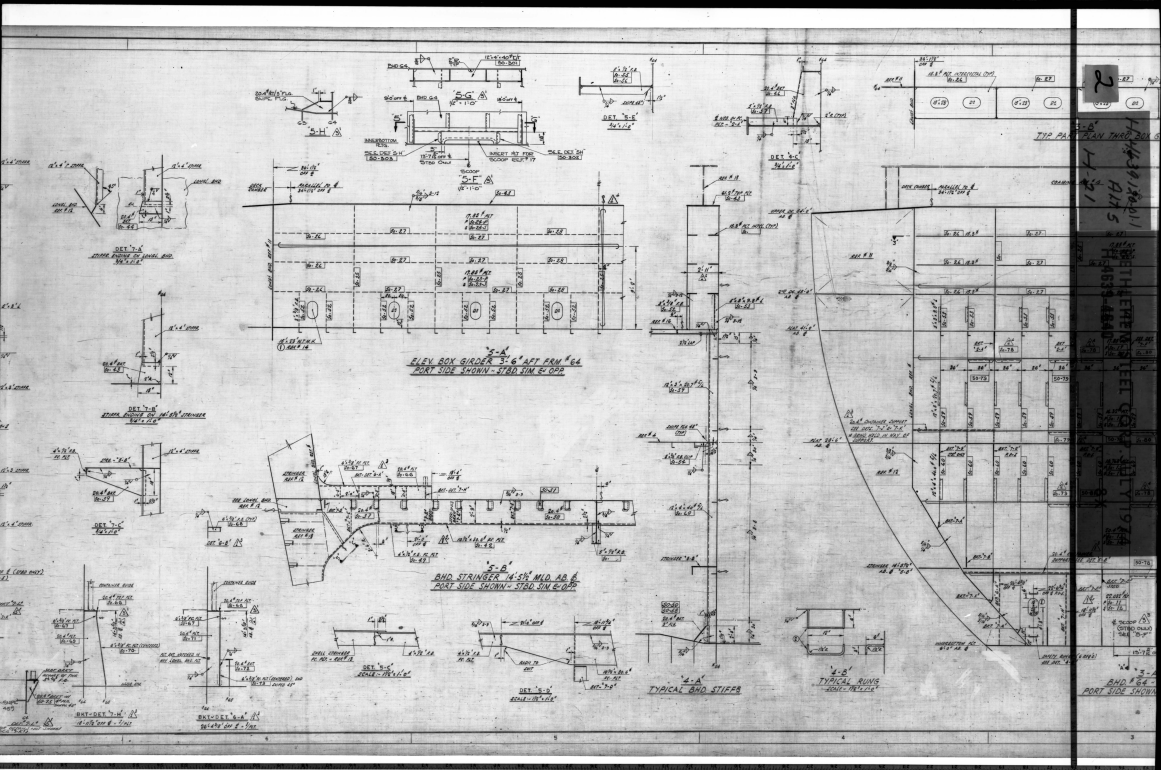
1

H-4639-126-01-1
Alt. 5
H-21

H 4639-4640

BETHLEHEM STEEL CORP. JULY 1974

8X


ELEV. BOX GIRDER 'E-E' @ 6' AFT FRM #64
PORT SIDE SHOWN - SIM. STBD SIM. @ OPP.
BHD. STRINGER '14-5/8" MLD. BR. @
PORT SIDE SHOWN - STBD SIM. @ OPP.
TYPICAL BHD STIFF.
TYPICAL RUNG
BHD. @ #64
PORT SIDE SHOWN
TYP. PASSAGEWAY THRU THIRD BOX GIRDER
DET. 'E-E'
DET. 'E-F'
DET. 'E-G'
DET. 'E-H'
DET. 'E-J'
DET. 'E-K'
DET. 'E-L'
DET. 'E-M'
DET. 'E-N'
DET. 'E-P'
DET. 'E-Q'
DET. 'E-R'
DET. 'E-S'
DET. 'E-T'
DET. 'E-U'
DET. 'E-V'
DET. 'E-W'
DET. 'E-X'
DET. 'E-Y'
DET. 'E-Z'
DET. 'E-AA'
DET. 'E-AB'
DET. 'E-AC'
DET. 'E-AD'
DET. 'E-AE'
DET. 'E-AF'
DET. 'E-AG'
DET. 'E-AH'
DET. 'E-AJ'
DET. 'E-AK'
DET. 'E-AL'
DET. 'E-AM'
DET. 'E-AN'
DET. 'E-AP'
DET. 'E-AQ'
DET. 'E-AR'
DET. 'E-AS'
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DET. 'E-AU'
DET. 'E-AV'
DET. 'E-AW'
DET. 'E-AX'
DET. 'E-AY'
DET. 'E-AZ'
DET. 'E-BA'
DET. 'E-BB'
DET. 'E-BC'
DET. 'E-BD'
DET. 'E-BE'
DET. 'E-BF'
DET. 'E-BG'
DET. 'E-BH'
DET. 'E-BJ'
DET. 'E-BK'
DET. 'E-BL'
DET. 'E-BM'
DET. 'E-BN'
DET. 'E-BP'
DET. 'E-BQ'
DET. 'E-BR'
DET. 'E-BS'
DET. 'E-BT'
DET. 'E-BU'
DET. 'E-BV'
DET. 'E-BW'
DET. 'E-BX'
DET. 'E-BY'
DET. 'E-BZ'
DET. 'E-CA'
DET. 'E-CB'
DET. 'E-CC'
DET. 'E-CD'
DET. 'E-CE'
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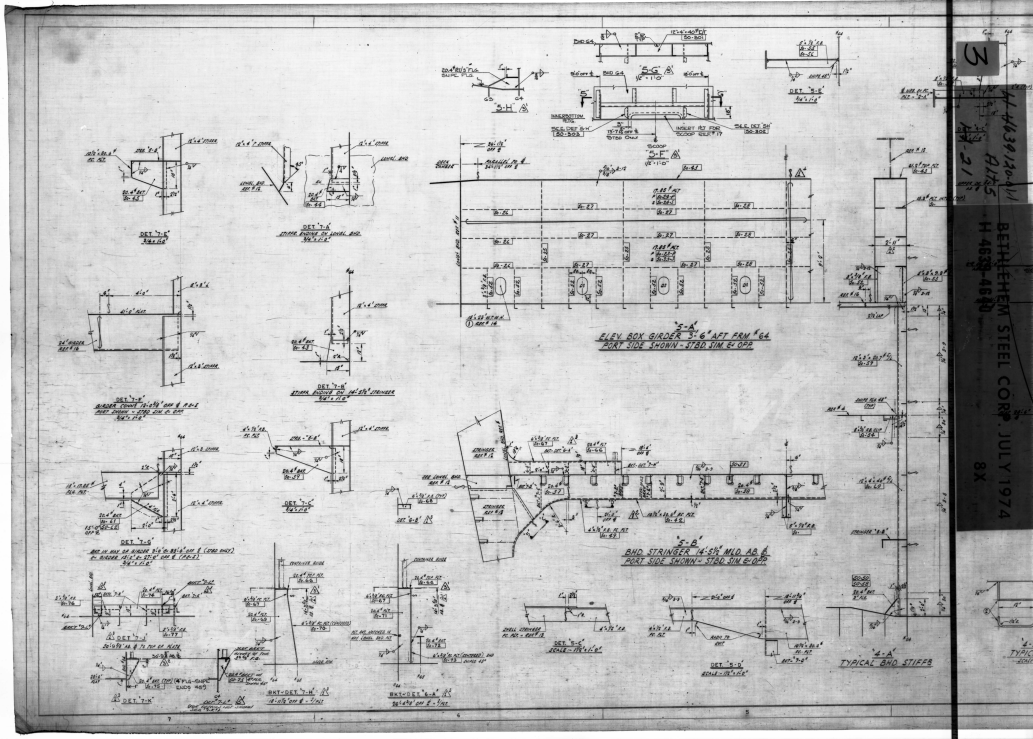
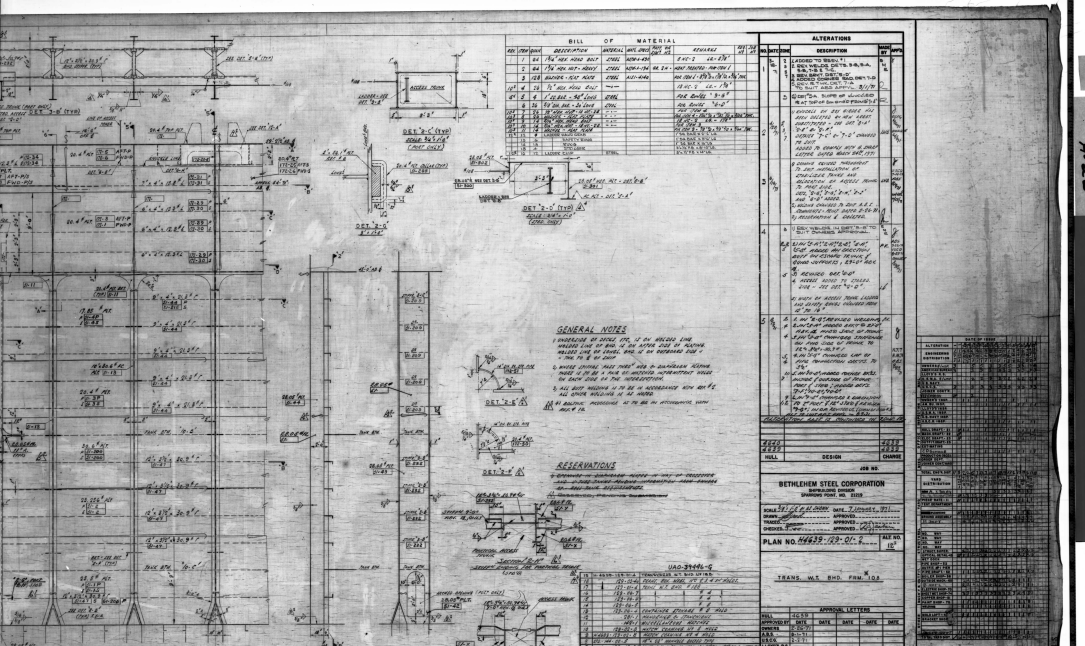

ELEV. BOX GIRDER "3-6" AFT FRM "64
PORT SIDE SHOWN - STBD SIM OPP
BHD STRINGER "4-6" M10 AB
PORT SIDE SHOWN - STBD SIM OPP
TYPICAL BHD STIFFS
BETHLEHEM STEEL CORP. JULY 1974
8X



BILL OF MATERIAL

NO.	ITEM	QUAN.	DESCRIPTION	MATERIAL	WT. EACH	TOTAL WT.	REMARKS	WT. PER ASSY.
		1	64	3/4" HEX HEAD BOLT	STEEL	NOM=4.94	1-67-1 LG.-3/4"	
		2	64	3/4" HEX NUT-HEAVY	STEEL	NOM=1.04	W 2.4 - HEAVY HEX NUT-3/4"-10 NC	
		3	128	WASHER-.532 HOLE	STEEL	ALL=4.44	NO 1261-1955-N.A.S. 1/2 NOM.	
		4	24	1/2" HEX HEAD BOLT	"	"	13-1/2" LG.-1/2"	
		5	4	1/2 DIA.-4 1/2" LONG	STEEL		HEX BOLT 1-3/4"	
		6	24	1/2 DIA.-2 1/4" LONG	STEEL		HEX BOLT 1-3/4"	
		7	24	1/2" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1/2"-13 NC	
		8	48	WASHER-.532 HOLE	STEEL		NO 1261-1955-N.A.S. 1/2 NOM.	
		9	4	1/2" HEX HEAD BOLT	STEEL		1-1/2" LG.-1/2"-13 NC-2 THDS.	
		10	4	1/2" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1/2"-13 NC	
		11	8	WASHER-.532 HOLE	STEEL		NO 1261-1955-N.A.S. 1/2 NOM.	
		12	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		13	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		14	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		15	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		16	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		17	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		18	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		19	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		20	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		21	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		22	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		23	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		24	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		25	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		26	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		27	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		28	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		29	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		30	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		31	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		32	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		33	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		34	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		35	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		36	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		37	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		38	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		39	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		40	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		41	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		42	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		43	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		44	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		45	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		46	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		47	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		48	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		49	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		50	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		51	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		52	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		53	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		54	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		55	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		56	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		57	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		58	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		59	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		60	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		61	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		62	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		63	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		64	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		65	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		66	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		67	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		68	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		69	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		70	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		71	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		72	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		73	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		74	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		75	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		76	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		77	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		78	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		79	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		80	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		81	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		82	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		83	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		84	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		85	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		86	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		87	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		88	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		89	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		90	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		91	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		92	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		93	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		94	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		95	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		96	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		97	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	
		98	1	WASHER-1.063 HOLE	STEEL		NO 1261-1955-N.A.S. 1" NOM.	
		99	1	1" DIA.-3" LONG	STEEL		1" DIA. ROUND-3" LONG	
		100	1	1" HEX NUT-HEAVY	STEEL		W 2.4 - HEAVY HEX NUT-1"-8 NC	

ALTERATIONS

NO.	DATE	ITEM	DESCRIPTION	MADE BY	APP'D
1	5-3-71	1	ADDED TO SHEET 1		
		2	REVISED DET. "B" & "C"		
		3	ADDED DET. "D"		
		4	REVISED DET. "A"		
		5	ADDED DET. "E"		
2	5-10-71	1	REVISED DET. "A"		
		2	ADDED DET. "F"		
		3	ADDED TO SHEET 1		
3	5-17-71	1	REVISED DET. "A"		
		2	ADDED DET. "G"		
		3	ADDED TO SHEET 1		
4	5-24-71	1	REVISED DET. "A"		
		2	ADDED DET. "H"		
		3	ADDED TO SHEET 1		
5	6-7-71	1	REVISED DET. "A"		
		2	ADDED DET. "I"		
		3	ADDED TO SHEET 1		
6	6-21-71	1	REVISED DET. "A"		
		2	ADDED DET. "J"		
		3	ADDED TO SHEET 1		
7	7-29-71	1	REVISED DET. "A"		
		2	ADDED DET. "K"		
		3	ADDED TO SHEET 1		

FILED	ISSUED
ADDED	ADDED
WELL	DESIGN CHANGE

JOB NO.

BETHLEHEM STEEL CORPORATION
BETHLEHEM, PENNSYLVANIA
SPARROWS POINT, MD. 21219

BOND	5/12/71	DATE 7 JANUARY 1971
DRAWN	APPROVED	
TRACED	APPROVED	
CHECKED	APPROVED	

PLAN NO. H4635-129-01-C — ALT NO. 11

TRANS. W.T. BHD. FRM. 103

APPROVAL LETTERS

	CLIENT				
	APPROVED BY	DATE	DATE	DATE	DATE
	ENGR'S	10-20-71			
	A.B.S.	8-31-71			
	U.S.C.G.	8-27-71			
	LLOYD'S REG. SERVICE				

"AS ABUILT"	U.S. MARKS
2-2-72	12-7-72 (E-W)
	6-8-73 (N-S)
	6-8-73 (W-E-N-S)
	7-29-73 (E-S-W-N)
	12-20-73

REFERENCE PLANS

NO.	PLAN NO.	TITLE
1	H4635-129-01-A	STRUCTURAL DETAILS
2	H4635-129-01-B	STRUCTURAL DETAILS
3	H4635-129-01-C	STRUCTURAL DETAILS
4	H4635-129-02-A	SHOP DRAWING FOR FIELD REPAIR
5	H4635-129-02-B	SHOP DRAWING FOR FIELD REPAIR
6	H4635-129-02-C	SHOP DRAWING FOR FIELD REPAIR
7	H4635-129-03-A	SHOP DRAWING FOR FIELD REPAIR
8	H4635-129-03-B	SHOP DRAWING FOR FIELD REPAIR
9	H4635-129-03-C	SHOP DRAWING FOR FIELD REPAIR
10	H4635-129-04-A	SHOP DRAWING FOR FIELD REPAIR
11	H4635-129-04-B	SHOP DRAWING FOR FIELD REPAIR
12	H4635-129-04-C	SHOP DRAWING FOR FIELD REPAIR
13	H4635-129-05-A	SHOP DRAWING FOR FIELD REPAIR
14	H4635-129-05-B	SHOP DRAWING FOR FIELD REPAIR
15	H4635-129-05-C	SHOP DRAWING FOR FIELD REPAIR
16	H4635-129-06-A	SHOP DRAWING FOR FIELD REPAIR
17	H4635-129-06-B	SHOP DRAWING FOR FIELD REPAIR
18	H4635-129-06-C	SHOP DRAWING FOR FIELD REPAIR
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20	H4635-129-07-B	SHOP DRAWING FOR FIELD REPAIR
21	H4635-129-07-C	SHOP DRAWING FOR FIELD REPAIR
22	H4635-129-08-A	SHOP DRAWING FOR FIELD REPAIR
23	H4635-129-08-B	SHOP DRAWING FOR FIELD REPAIR
24	H4635-129-08-C	SHOP DRAWING FOR FIELD REPAIR
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100	H4635-129-34-A	SHOP DRAWING FOR FIELD REPAIR

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BETHLEHEM STEEL CORP. JULY 1974
H 4635-4640
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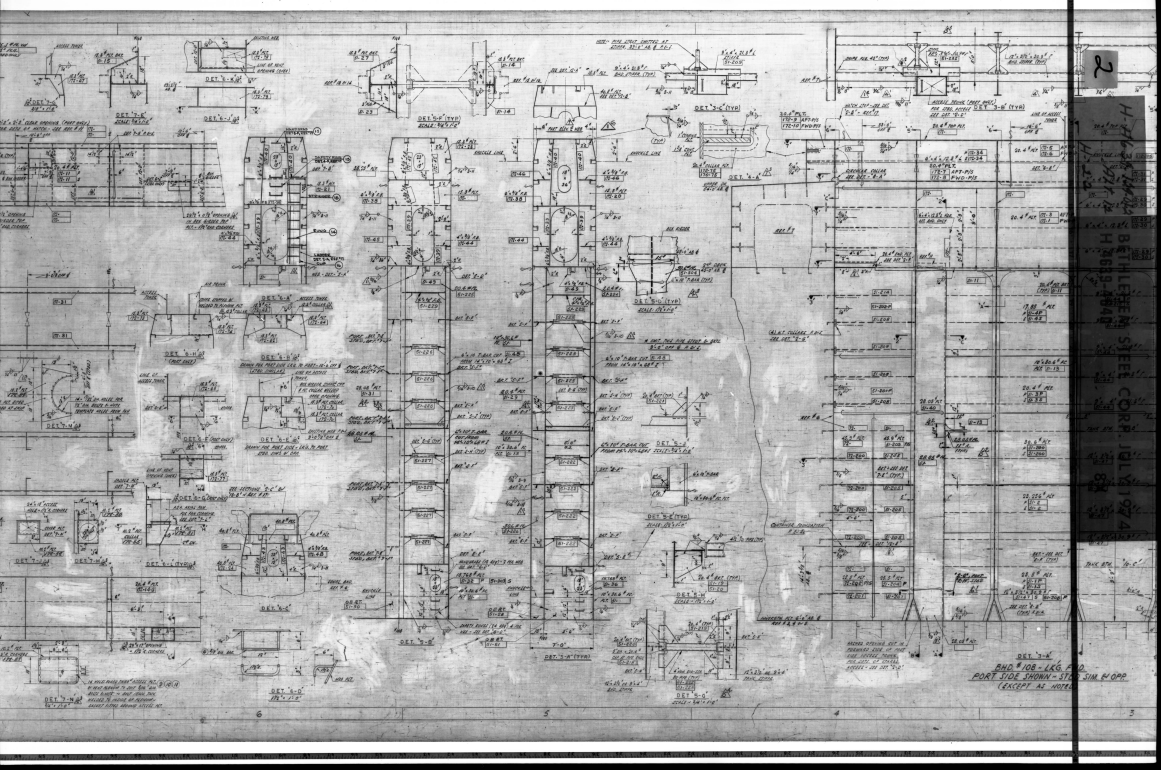
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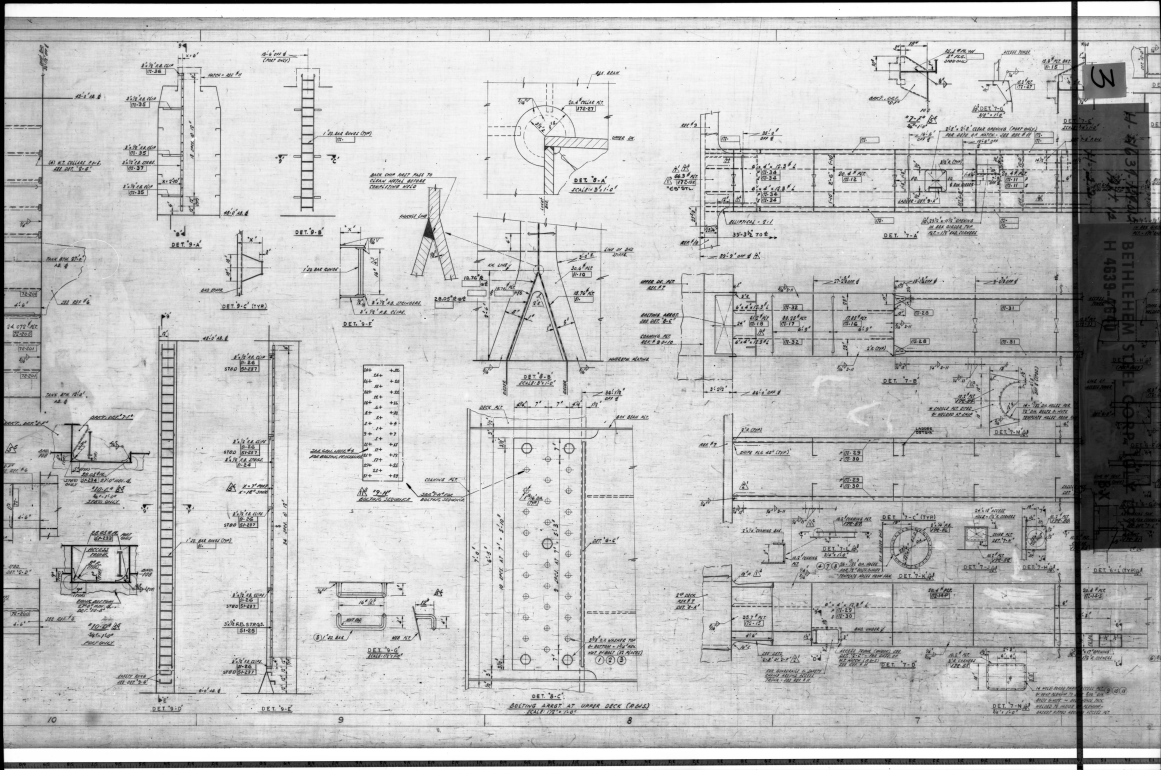
PORT SIDE SHOWN - STBD SIM. & OPP.
(EXCEPT AS NOTED)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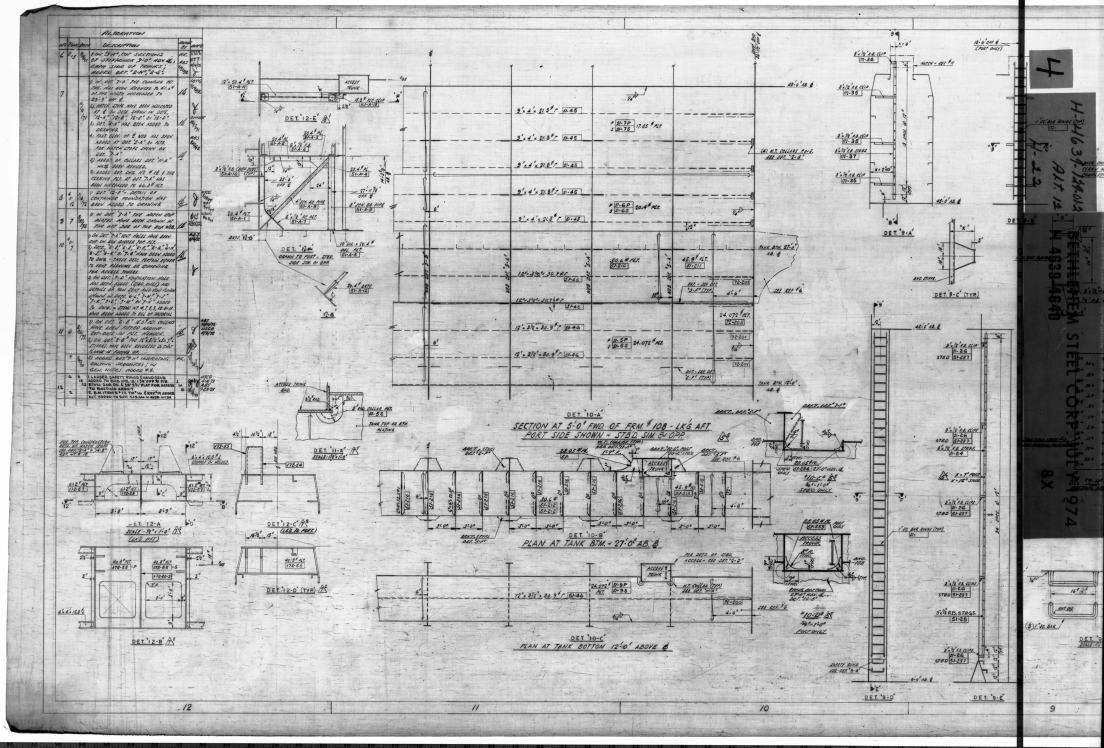
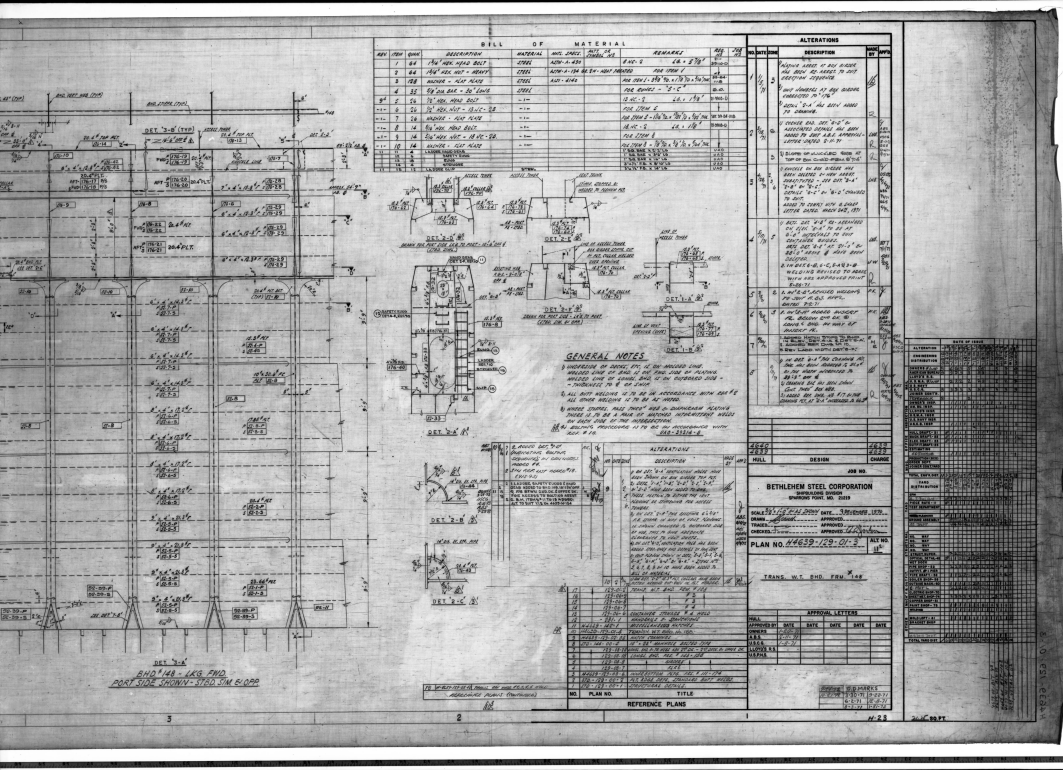
H 463-1537
BETHLEEM STEEL CORP. QUINCY, MASS.


4
H-34634-29A-D12
ALT. 12
H-4939-4640
BETHLEHEM STEEL CORP. JULY 1974
8X
SECTION AT 5'-0" FWD OF FRM #108 - LKG AFT
PORT SIDE SHOWN - STBD SIM OPP
PLAN AT TANK BTM - 27'-0" AB ℄
PLAN AT TANK BOTTOM 12'-0" ABOVE ℄
12
11
10
9



BILL OF MATERIAL

REV	ITEM	QUAN	DESCRIPTION	MATERIAL	SPEC. OR DRAWING NO.	REMARKS	WEIGHT EACH	WEIGHT TOTAL
	1	64	7/8" HIGH STRENGTH BOLT	STEEL	ASTM-A-325	1 NUT, 2 WASHERS	4.0 LBS	256 LBS
	2	64	7/8" HEAVY HEX NUT - HEAVY	STEEL	ASTM-A-194 GR 2H	HOT FORGED	PER ITEM 1	INCLUDED IN ITEM 1
	3	128	WASHER - HEAT TREATED	STEEL	ASTM-A325	HOT FORGED	PER ITEM 1	INCLUDED IN ITEM 1
	4	32	5/8 DIA BOLT x 2½" LONG	STEEL		PER DWG'S - 3'-6"		
	5	56	7/8" HIGH HEAD BOLT	STEEL		12 REQ'D	2.6 LBS	145.6 LBS
	6	56	7/8" HEAVY HEX NUT - GRADE C3	STEEL		FOR ITEM 5		INCLUDED IN ITEM 5
	7	28	WASHER - PLATE FILLER	STEEL		PER ITEM 5 - 10/16"x 7/8"D x 5/16" THK		
	8	14	5/8 HIGH HEAD BOLT	STEEL		16 REQ'D	1.6 LBS	22.4 LBS
	9	14	5/8" HEAVY HEX NUT - GRADE C3	STEEL		FOR ITEM 8		INCLUDED IN ITEM 8
	10	14	WASHER - FILLER PLATE	STEEL		PER ITEM 8 - 10/16"x 7/8"D x 5/16" THK		
	11	1	LICENSE CONSTRUCTION SAFETY SIGN			1 REQ'D		
	12	4	SAFETY SIGN			1 REQ'D		
	13	4	SAFETY SIGN			1 REQ'D		
	14	1	LICENSE SIGN			1 REQ'D		

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	11-2-73	B-2	REVISED SHEET TO SHOW REVISED BOX BEAM B2 MARKS TO SUIT REVISED FRAMING		
			SHT CHANGED AS SEE GENERAL ALTERATION NO. 1		
			REVISED "3-4" ALL BOX MARKS TO 3 MARKS		
2	12-2-73	B-2	1 STRINGER DWG. 207 "B-2" RE-ASSIGNED DETAILS AND SHOP MARKS FOR ALL REMAINING LATTICE GIRDER		
			1 SLAB TOP REINFORCING MARK NO. 107 TOP OF BOX CLOSED-PIECE "B-2"		
3	1-3-74	B-2	1 BOX SEC. 3-4 "B" RE-ASSIGNED DETAILS, SHOP MARKS, SHEAR CONNECTORS - SEE SHT 3-4		
			1 SLAB TOP REINFORCING MARK NO. 107 CHANGED TO 207		
			ADDED TO CURVE NOTE & SHOP LETTER DATED MARCH 2ND, 1973		
4	1-31-74	B-2	1 BOX SEC. 3-4 "B" RE-ASSIGNED ITS SHT. 3-4 "B" AS AT 8'-0" HORIZONTALLY TO SUIT CHANGED BRACE		
			1 SLAB TOP REINFORCING MARK NO. 107 CHANGED TO 207		
			1 PLATE 6'-0 x 1'-6 x 5/8" WELDING REVISED TO SUIT REVISED DETAIL		
5	2-5-74	B-2	1 1/4" x 4" ARCHED WELDING PL. ABOUT 0.0. APPL.		
6	3-4-74	B-2	1 WEB PLATE MARKED BRACKET PL. REVISED WITH NEW SHOP MARK NO.		
7	3-11-74	B-2	1 Temporary Erection Bracing Pl. Revised with new Shop Mark No.		
8	3-18-74	B-2	1 PL. 3/4" x 1'-0" x 1'-0" Revised to Suit New Shop Mark No.		
			1 Stringer Web Pl. Box 2-Mark Shop Mark No.		
			1 Stringer Web Pl. Box 2-Mark Shop Mark No.		

4640			4639
2939			2939
MILL	DESIGN		CHANGE

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

BOM'S 10-16-73 DWG'S 2-20-74 DATE 3 DECEMBER 1973
DRAWN ..... CHECK ..... APPROVED .....
TRACED ..... CHECK ..... APPROVED .....
CHECKED ..... APPROVED .....

PLAN NO. H4639-A-20-01-3 | SHT. NO. 18

TRANS. W.T. RHD. FRM 148

APPROVAL LETTERS					
FOR APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	4-25-74				
A.B.S.	4-25-74				
A.A.A.	4-25-74				
LLOYD'S R.S.					
VEPIRS					

REVISIONS	BY	DATE
1	W.D.M.	11-2-73
2	W.D.M.	12-2-73
3	W.D.M.	1-3-74
4	W.D.M.	1-31-74
5	W.D.M.	2-5-74
6	W.D.M.	3-4-74
7	W.D.M.	3-11-74
8	W.D.M.	3-18-74

NO.	PLAN NO.	TITLE
		REFERENCE PLANS

GENERAL NOTES

1) INSPECTION OF SHOP, ETC. OF ALL WELDED LONG WELDED SHOP SPLICES AND ALL FIELD WELDING, WELDED LINE OF LOWER BRACE OF ON OVERHEAD SIDE - ALL OTHERWISE IN A FLAT POSITION.

2) ALL BUTT WELDING IS TO BE AN ACCEPTABLE WITH RUN OFF TABS AND ALL OTHER WELDING IS TO BE AS SHOWN.

3) WHERE STIFFEN, MAKE SHOP AND ALIGNMENT MARKING AS SHOWN ON THE ERECTION DRAWINGS AND ALSO SIDE OF THE INTERSECTING.

4) ALL WELDING PROCEDURES TO BE USED IN ACCORDANCE WITH AWS D1.1.

DET "2-A"

DET "2-B"

DET "2-C"

DET "3-A"

DET "3-B" (TYP)

DET "3-C"

DET "3-D"

DET "3-E"

DET "3-F"

DET "3-G"

DET "3-H"

DET "3-I"

DET "3-J"

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DET "3-M"

DET "3-N"

DET "3-O"

DET "3-P"

DET "3-Q"

DET "3-R"

DET "3-S"

DET "3-T"

DET "3-U"

DET "3-V"

DET "3-W"

DET "3-X"

DET "3-Y"

DET "3-Z"

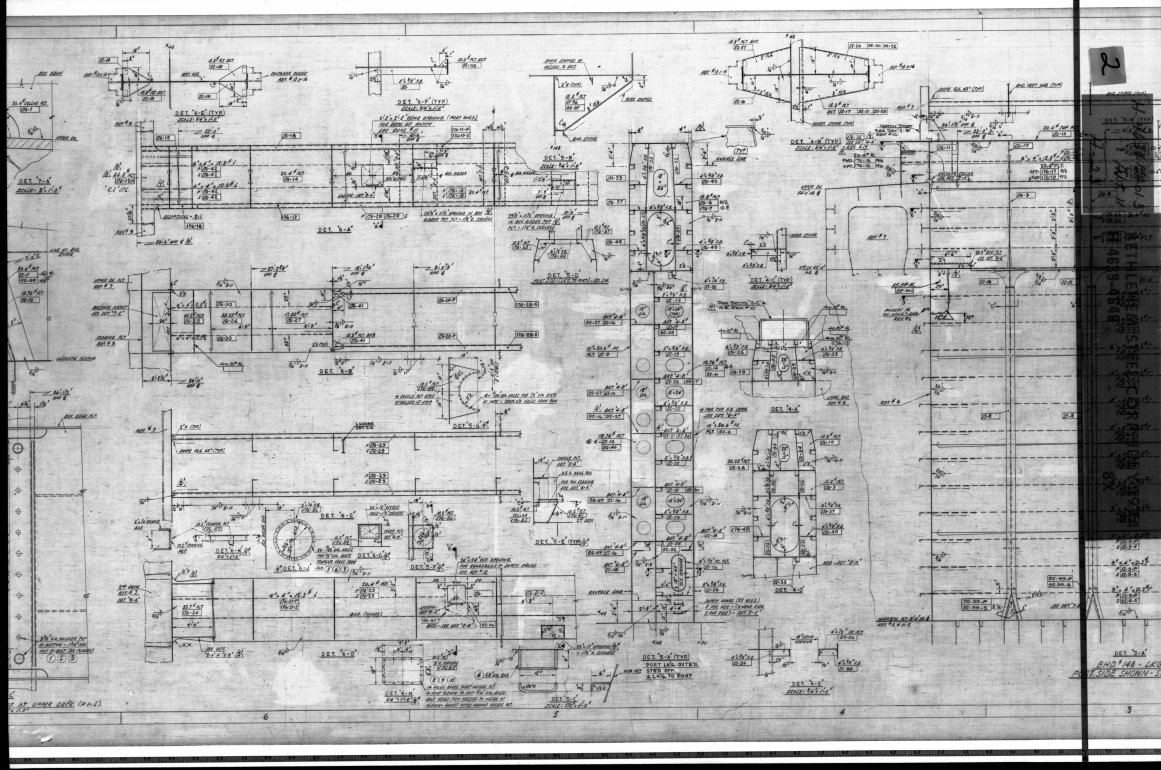
DET "4-A"

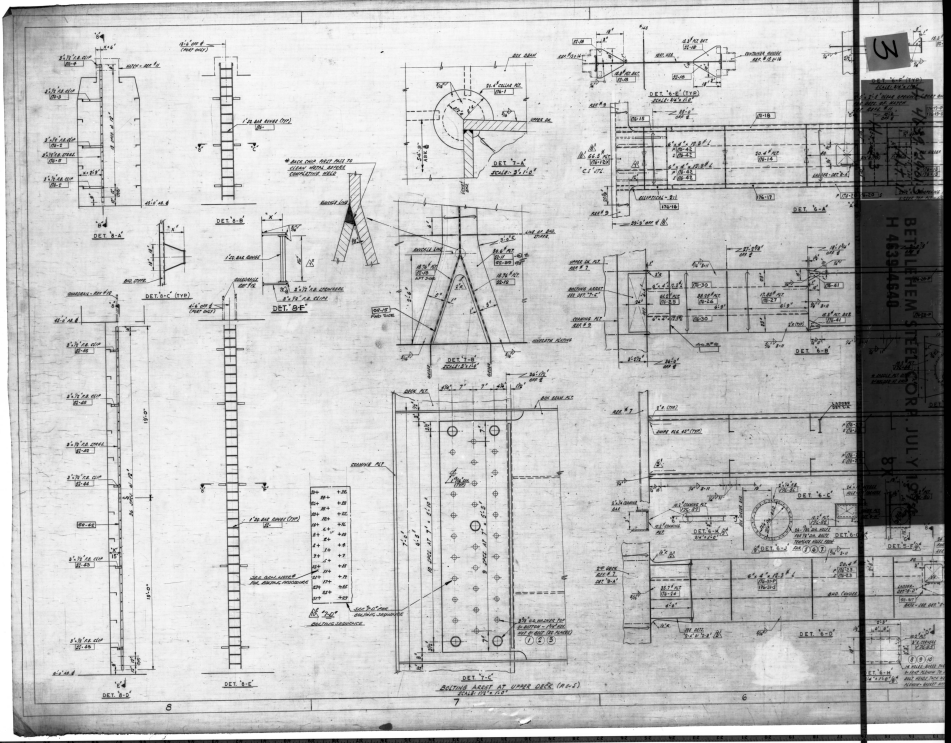
RHD 148 - W.T. RHD
PORT SIDE SHOWN - STBD SIM. BLDRS

H: 4639-A20-01-3
PLT. II
H-23

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

8.10 LBS/SQ.FT.




DET. 'B-B'
DET. 'C-C' (TYP.)
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DET. 'S39-S39'
DET. 'T39-T39'
DET. 'U39-U39'
DET. 'V39-V39'
DET. 'W39-W39'
DET. 'X39-X39'
DET. 'Y39-Y39'
DET. 'Z39-Z39'
DET. 'A40-A40'
DET. 'B40-B40'
DET. 'C40-C40'
DET. 'D40-D40'
DET. 'E40-E40'
DET. 'F40-F40'
DET. 'G40-G40'
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DET. 'U40-U40'
DET. 'V40-V40'
DET. 'W40-W40'
DET. 'X40-X40'
DET. 'Y40-Y40'
DET. 'Z40-Z40'
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DET. 'C41-C41'
DET. 'D41-D41'
DET. 'E41-E41'
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DET. 'G41-G41'
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DET. 'V41-V41'
DET. 'W41-W41'
DET. 'X41-X41'
DET. 'Y41-Y41'
DET. 'Z41-Z41'
DET. 'A42-A42'
DET. 'B42-B42'
DET. 'C42-C42'
DET. 'D42-D42'
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DET. 'F42-F42'
DET. 'G42-G42'
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DET. 'K42-K42'
DET. 'L42-L42'
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DET. 'V42-V42'
DET. 'W42-W42'
DET. 'X42-X42'
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DET. 'Z42-Z42'
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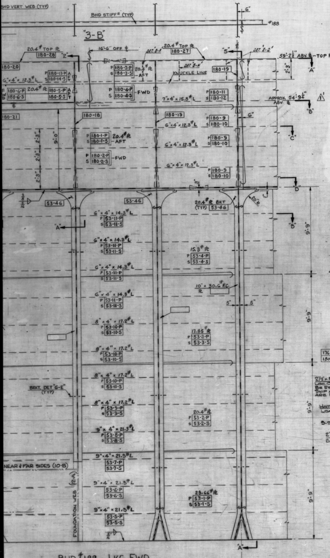
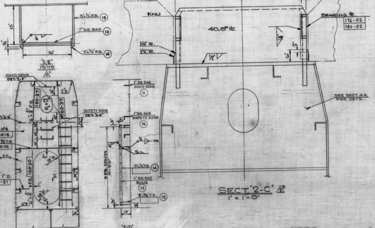
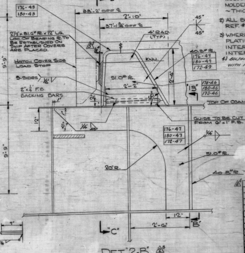
DET. 'T49-T49'
DET. 'U49-U49'
DET. 'V49-V49'
DET. 'W49-W49'
DET. 'X49-X49'
DET. 'Y49-Y49'
DET. 'Z49-Z49'
DET. 'A50-A50'
DET. 'B50-B50'
DET. 'C50-C50'
DET. 'D50-D50'
DET. 'E50-E50'
DET. 'F50-F50'
DET. 'G50-G50'
DET. 'H50



BHD.#188 - LKG. FWD.
PORT SIDE SHOWN - STBD. SIM. & OPP.



SECT. "2-C" 1" = 1'-0"



DET. "2-B"
ELEV. OF HATCH STOP PORT SHOWN
STBD. OPP. LOOKING FWD.
1" = 1'-0"

"2-F" HAND GRAB 1 1/2" = 1'-0"

BILL OF MATERIAL

REV	ITEM	QUAN	DESCRIPTION	MATERIAL	MATL SPEC	PATT OR SYMBOL No	REMARKS	REQ No.	JOB No.
	1	64	1 3/4" HEX HEAD BOLT	STEEL	ASTM-A-490		5NC-2 LG.=5 7/8"	21-39387-A	
	2	64	1 3/4" HEX NUT-HEAVY	STEEL	ASTM-A-194	GR 2H-HEAT TREATED	FOR ITEM 1		
	3	128	WASHER - FLAT PLATE	STEEL	AISI-4140		FOR ITEM 1-3 3/8" O/D x 1 7/8" I.D.-3/16" THK.		
	4	19	5/8" DIA. BAR ~ 30" LONG	STEEL			FOR RUNGS ~ "5-C"	S.O.	
5^4	5	26	1/2" HEX. HEAD BOLT	-"-			13 NC-2 LG.~1 3/8"	21-39110-U	
-"-	6	26	1/2" HEX. NUT ~ 13 NC-2B.	-"-			FOR ITEM 5		
-"-	7	26	WASHER - FLAT PLATE	-"-			FOR ITEM 5 ~ 1 1/16" O/D x 17/32" I/D. x 3/32" THK.	Swt. 39-84-1886	
-"-	8	14	5/16" HEX. HEAD BOLT	-"-			18 NC-2 LG.~1 1/8"	21-39110-U	
-"-	9	14	5/16" HEX. NUT ~ 18 NC-2B.	-"-			FOR ITEM 8 ~		
-"-	10	14	WASHER - FLAT PLATE	-"-			FOR ITEM 8 - 7/16" O/D x 3/8" I/D x 5/64" THK.		
8^2	11	4	LADDER HAND GRAB				1" SQ. BAR x 2'2" LG.		
	12	6	SAFETY RUNG				1" SQ. BAR x 3'6" LG.		
	13	18	RUNG				1" SQ. BAR x 16" LG.		
	14	4	STRINGER				3"x1/2" F.B. x 8'10" LG.		
8^2	15	12	LADDER CLIP	STEEL			3"x1/2" F.B. x 14" LG.		

GENERAL NOTES

1) UNDERSIDE OF DECKS, ETC. IS ON MOLDED LINE. MOLDED LINE OF BHD. IS ON FWD. SIDE OF PLATING. MOLDED LINE OF LONG'L. BHD. IS ON OUTB'D. SIDE ~ THICKNESS TO ℄ SHIP.
2) ALL BUTT WELDING IS TO BE IN ACCORDANCE WITH REF. #2. ALL OTHER WELDING IS TO BE AS NOTED.
3) WHERE STIFF'S PASS THROUGH WEB & DIAPHRAGM PLATING THERE IS TO BE A PAIR OF MATCHED INTERMITTENT WELDS ON EACH SIDE OF THE INTERSECTION. 11AO - 39529
4) BOLTING PROCEDURE IS TO BE IN ACCORDANCE WITH REF. #15.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	7/19/71	2,A,10, 11&12	1) AT "BHD.#188-LKG.FWD": REV. ABV. ℄ DIMS. FROM 14'-0", 30'-0", 38'-0" & 54'-7 1/4" TO 14'-0 5/8", 30'-0 5/8", 38'-0 5/8" & 54'-9 1/4". IN "9-F": REV. ABV. ℄ DIM. FROM 30'-0" TO 30'-0 5/8". IN "10-A" & "12-B": REV. ABV. ℄ DIM. FROM 38'-1 3/8" TO 38'-0 5/8". 2) IN "10-A" & "11-A": REV. BUTT DIM. ABV. TOP OF FDN. (14'-0 5/8" ABV. ℄) FROM 9" TO 10". 3) IN "12-C": REV. BUTT IN 10" F.B. F.B. FROM 15" TO 10" OFF 4 3/4 F.B.	F.E.W.	GGS 8/31/71
	7/26/71	4	4. IN "ELEV. OF BHD. 188" ADDED INSERT PL. BELOW 2ND DK. @ LONG'L BHD. IN WAY OF INSERT PL.	P.K.	[signature]
	8/25/71	3,4 5 11 10	5. IN "3-B" REVISED SIZE OFF WELDING. 6. IN "5-A" CHANGED THE SIZE OF WELDING 7. IN "11-A" & "10-A" INCREASED THE GIRDER BELOW FDN. TO 25" AND ADDED F.C. PL.; ADDED DET "11-D" ALT. TO SUIT A.B.S. APP'L DATED 8-11-71	P.K.	
2	8/30/71	3 4 2,13 8	1. ADDED HATCH STOPS TO BHD. ELEV. 2. REV. DET. "4-A" TO INDICATE STOP. 3. ADDED DET. "2-A" & SECTS. "2-C" & "13-B". 4. REV. WIDTH OF VERT. LADD. TO 16".	E M E	ABS, USCG, OWNER [signatures]
3	10/18/71	2	1. IN "2-B" ADDED 1/8" GAP DIMENSION, BETWEEN BEARING PL & HATCH COVER STOP., TO SUIT OWNER APP'L DATED 10-6-71	P.K.	OWNER 10/27/71 [signature]
	11/11/71	6	2, IN DET. "6-A" THE COAMING PLT. THK. HAS BEEN REDUCED TO 37.0# & THE WIDTH INCREASED TO 39'-9" OFF ℄. 3) COAMING BAR HAS BEEN SHOWN CONT. THRU' BOX WEB 4) ADDED REF. DWG. No #14	[signature]	USCG, ABS [signatures]
	11/18/71		5, INCREASED HEIGHT OF FDN'S "10-B" TO 14'-3 5/8", "9-C" TO 30'-9 5/8" & "9-B" TO 39'-0 5/8" ABV. ℄. DETS. 9-A,B,C,D,E,F,G - 11-A,B,C - 12-A & 12.B REVISED TO SUIT.	CBP	
4	12/13/71	9	1. DET "9-A": FDN DEPTH WAS 3'-1" NOW 2'-1". DET. "9-D": FDN DEPTH WAS 3'-10" NOW 3'-1". Y.I.S. 4639-H-42.	CBP	12.16.71 [signature]
6	8/17/72	5	1) ON DET "5-F" 15.3# PLT. COLLARS HAVE BEEN FITTED AROUND CUT-OUTS IN PLT. HEADER	[signature]	[signature]

ALTERATION LIST CONTINUED IN ZONE 13

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
5		5, 6, 7	1) ON DET. "6-A" VENTILATION HOLES HAVE BEEN SHOWN ON BOX GIRDER TOP PLT. 2) DETS. "5-D", "5-E", "5-F", "5-G", "5-H", "5-J", "5-K", "7-E", "7-F", & "7-G" HAVE BEEN ADDED TO DWG.... THESE PERTAIN EITHER TO VENT PLENUMS OR STIFFENING FOR ACCESS TOWERS. 3) ON DETS. "5-G" & "7-E" THE EXISTING 6" x 3/8" F.B. STIFFS. IN WAY OF VENT PLENUMS ARE SHOWN CHANGED TO OUTBOARD SIDE OF WEBS, THIS TO GIVE ADEQUATE CLEARANCE TO VENT DUCTS. 4) VENT HOLE SHOWN F.G.S. ON DET. "6-D" - DET. "7-H", "7-J", "7-K", "7-L", "7-M" & "7-O" ADDED TO DWG. - ITEMS No 5,6,7,8,9 & 10 ADDED TO BILL OF MATERIAL.	[signature]	[signature]

REFERENCE PLANS

NO.	PLAN NO.	TITLE
15	H-4639-129-03-16	TRANS. BHD. WELDS
14	129-01-2	TRANS. BHD. FRM. # 108
13	231-1	HANDRAILS & STANCHIONS
12	142-1	MISCELLANEOUS HATCHES
11	06-11	CONTAINER STOWAGE #2 HOLD
10	06-10	CONTAINER STOWAGE #2 HOLD
9	06-09	CONTAINER STOWAGE #3 HOLD
8	06-08	CONTAINER STOWAGE #3 HOLD
7	H4639-129-02-08	HATCH COAMINGS
6	STD-144-00-5	15"x23" MANHOLE BOLTED TYPE
5	03-26	LONG'L BHD. WEBS 2ND DK & UP DK FRS 164-197
4	03-20	LONG'L BHD FRS. 175-190
3	H4639-129-03-9	INNERBOTTOM PLTG FRS 175-190
2	STD-129-00-2	PLT EDGE DETS. STANDARD BUTT WELDS
1	STD-129-00-1	STRUCTURAL DETAILS

REFERENCE PLANS (CONTINUED)

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" & NOTED — DATE 14 MAY 1971
DRAWN C. B. PEARRE — APPROVED
TRACED — APPROVED
CHECKED [signature] — APPROVED [signature]

PLAN NO. H4639-129-01-4 — ALT. NO. 8^2

TRANSVERSE W.T. BHD.
No 188

APPROVAL LETTERS

APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-21-71				
A.B.S.	8-11-71	1-9-73			
U.S.C.G.	6-16-71	8-11-72	9-22-72	11-9-72	
LLOYD'S R.S.					
U.S.P.H.S.					

O.D. MARKS		
10-12-72		
12-29-72	7-19-71	1-7-72
4-27-73	8-6-71	1-28-72
	11-1-71	7-24-72

DATE OF ISSUE

DISTRIBUTION	ENTRIES
ALTERATION	- - A1 A2 A3 A4 A5 A6 A7 A8 [illegible]
OWNERS #1 INSP.	4 4 5 5 5 5 3 4 4
AMERICAN BUREAU	3 3 3 3 3 3 3 3 3
LLOYD'S R.S.	
U.S.M.A. #1 INSP.	2 2 2 2 2 2 2
U.S. NAVY	
U.S.C.G.	3 3 3 3 3 3 3 3 3
JOINER CONT'R.	
TOTAL ENG'R. DIST.	23 [illegible] 19 17 2 2 19 2 17 2 18 1 18 2
TOTAL YARD DIST.	[illegible]

H-24 — 33.75 SQ.FT.

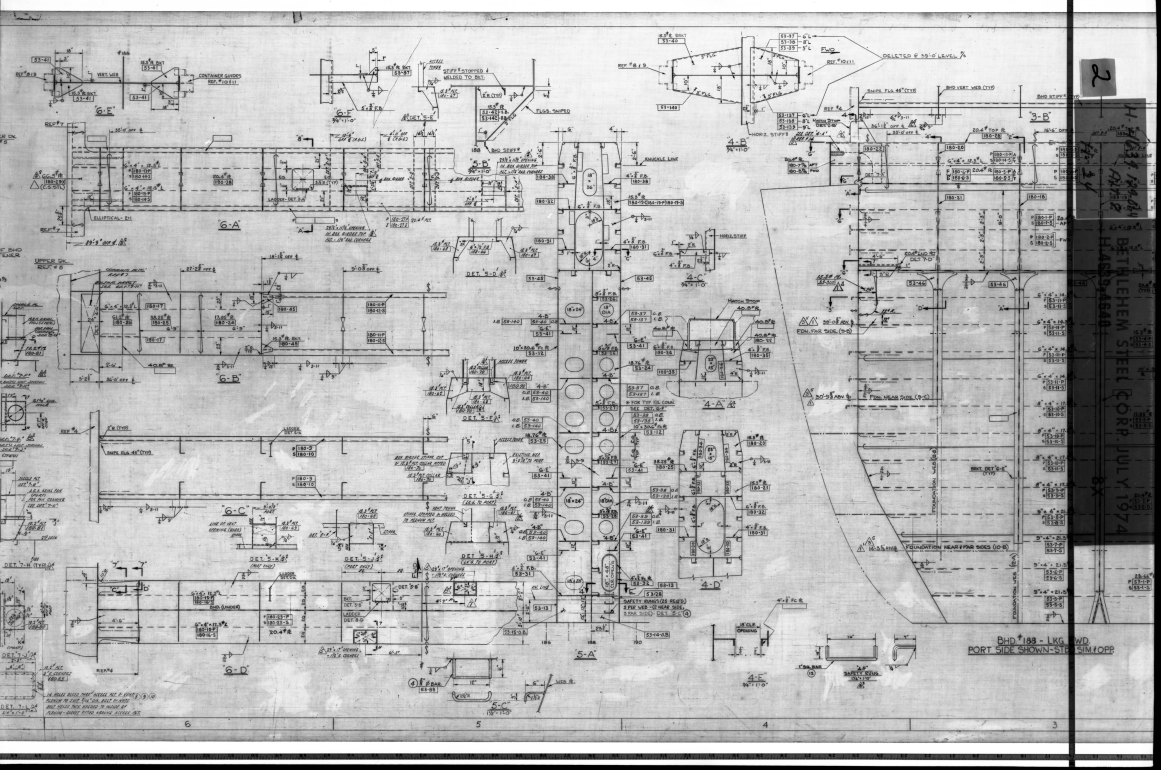
4639, 40 - ALT. 5^4; 4639, 40 - ALT. 5^2; 4639, 40 - ALT. 6^2; 4639, 40 - ALT. 6^3; 4639, 40 - ALT. 7^3; 4639, 40 - ALT. 7^2; 4639, 40 - ALT. 8^1; 4639, 40 - ALT. 8^2

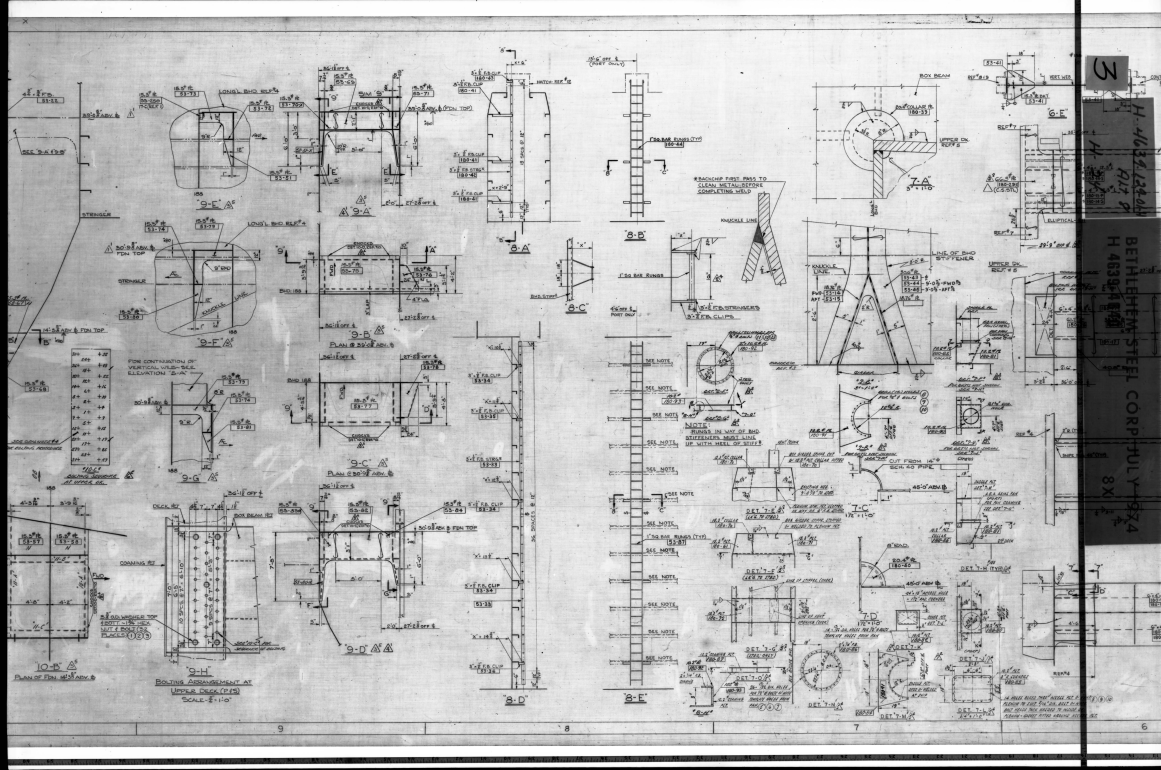
TRANSV. W.T. BHD. 188 H4639-129-01-4

3 — 2 — 1

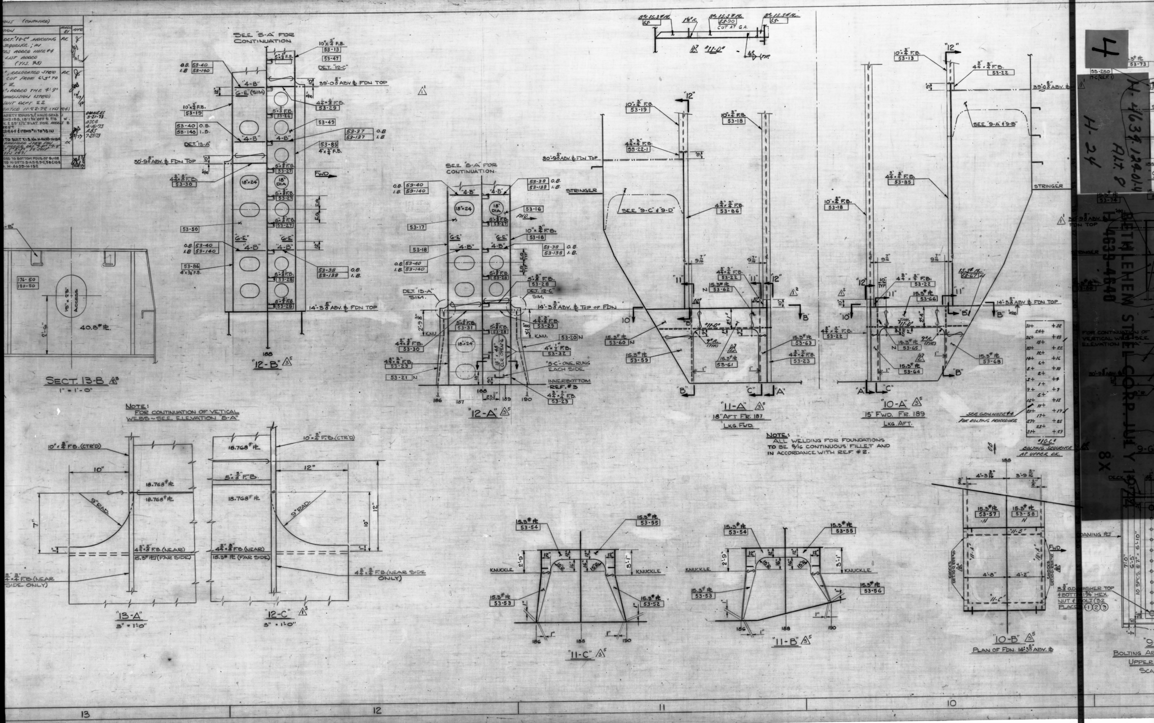
1
H-4639.129-01-4 Alt 8
H-24

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

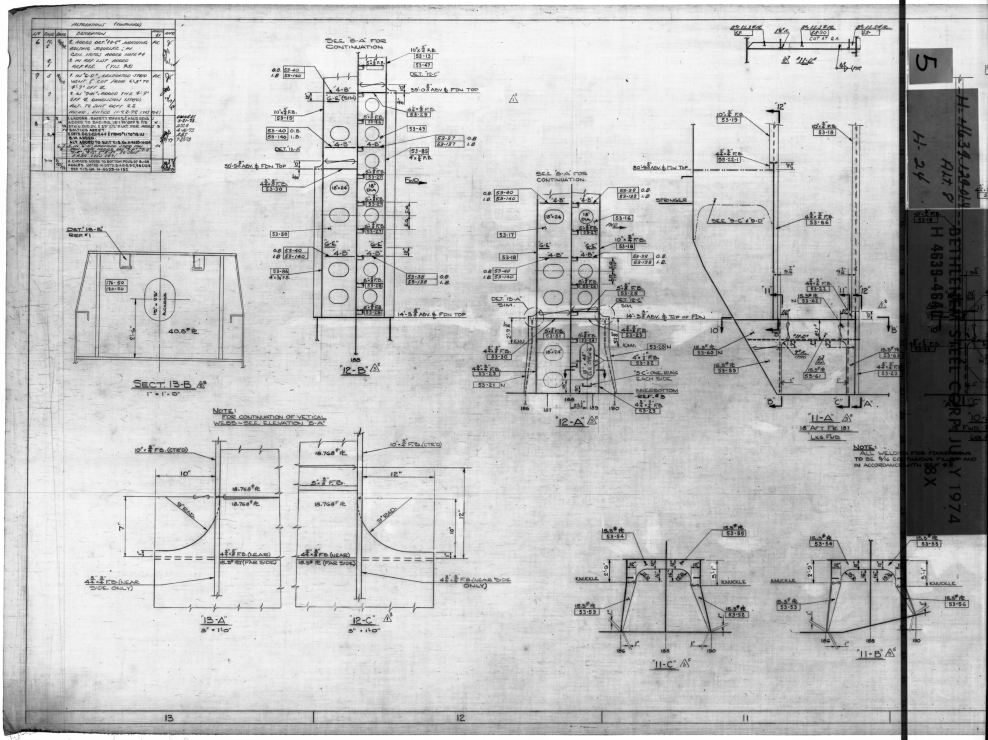

BETHLEHEM STEEL CORP. JULY 1974
H-4633-A6A0
2
BHD #188 - LKG. WD.
PORT SIDE SHOWN-STBD SIM. & OPP.
6-A
6-B
6-C
6-D
6-E
5-A
5-B
5-C
4-A
4-B
4-C
4-D
4-E
3-B
DELETED @ 35'-0" LEVEL
FOUNDATION HEAD & PAD SIDES (10-B)
SAFETY RESIL.
6
5
4
3



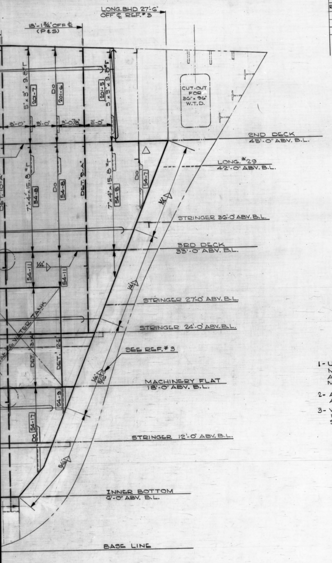
BETHLEHEM STEEL CORP. JULY 1974
8X
3
H-4639 124-0
H-4639 124-0
9-E
9-A
9-F
9-B
9-C
9-G
9-D
9-H
10-B
8-A
8-B
8-C
8-D
8-E
7-A
7-C
7-D
6-E
PLAN OF FIN
BOLTING ARRANGEMENT AT UPPER DECK (P.S.)
SCALE-1/2"=1'-0"
FOR CONTINUATION OF VERTICAL WEB-SEE ELEVATION "2-A"
NOTE: RUNNER IN WAY OF BND STIFFENERS MUST LINE UP WITH HEEL OF STIFF
BACKCHIP FIRST PASS TO CLEAN METAL BEFORE COMPLETING WELD
KNUCKLE LINE
LONG'L BHD REF
STRINGER
ROX BEAM
UPPER DK
LINE OF BHD STIFFENER
CUT FROM 14" SCH 40 PIPE
9
8
7
6



(CONTINUED)
MADE BY
APP'D
DET. "10-C", INDICATING SEQUENCE.; IN
ADDED NOTE #4
LIST ADDED
(Y.I.S. 93)
RELOCATED STB'D
CUT FROM 6'-3" TO
ADDED THE 4'-9"
DIMENSION (STB'D)
SUIT DEPT. 22
DATED 11-22-72 (Y.I.S. 124)
OWNERS 3-21-73
USCG 4-16-73
ABS 7-23-73
TO SUIT Y.I.S. No. H-4639-H-154
H-4639-H-152
SEE "5-A" FOR CONTINUATION
10"x 3/4" F.B. 53-13
53-47
DET. "12-C"
39'-0 5/8" ABV ℄ FDN TOP
30'-9 5/8" ABV. ℄ FDN TOP
14'-3 5/8" ABV. ℄ FDN TOP
DET. "13-A"
FWD
18"x24"
18" DIA
"12-B"
188
SECT. 13-B
1" = 1'-0"
40.8# PL.
176-50
180-50
15"x23" ACCESS
NOTE: FOR CONTINUATION OF VETICAL WEBS ~ SEE ELEVATION "5-A"
10"x 3/4" F.B. (CTR'D)
18.768# PL
9" RAD.
4 3/4"x 3/8" F.B. (NEAR)
15.3# PL (FAR SIDE)
4 3/4"x 3/4" F.B. (NEAR SIDE ONLY)
"13-A"
3" = 1'-0"
"12-C"
3" = 1'-0"
SEE "5-A" FOR CONTINUATION.
16" x 48" CLR. OPEN'G.
"5-C" - ONE RUNG EACH SIDE
INNERBOTTOM - REF. #3
"12-A"
186
187
189
190
"11-D"
CUT AT G.A.
STRINGER
SEE "9-C" & "9-D"
"11-A"
18" AFT FR. 187
LKG. FWD.
SEE "9-A" & "9-B"
"10-A"
15" FWD. FR. 189
LKG. AFT.
NOTE: ALL WELDING FOR FOUNDATIONS TO BE 5/16 CONTINUOUS FILLET AND IN ACCORDANCE WITH REF. #2.
SEE GEN. NOTE #4 FOR BOLTING PROCEDURE
"10-C" BOLTING SEQUENCE AT UPPER DK.
KNUCKLE
"11-C"
"11-B"
"10-B"
PLAN OF FDN. 14'-3 5/8" ABV. ℄
CHOCKS DET. 10-D, REF. 10
FOR CONTINUATION OF VERTICAL WEBS SEE ELEVATION "5-A"
3 3/8" O.D. WASHER TOP & BOTTOM 1 3/4" HEX. NUT & BOLT (32 PLACES)
BOLTING ARR. UPPER
H-4639-124-01-4 ALT. 8
H-24
BETHLEHEM STEEL CORP. JULY 1974
H-4639-4640
8X
4
13
12
11
10



5
H-4639-129-01
BETHLEHEM STEEL CORP. JULY 1974
H 4639-464
H-24
SECT. 13-B
1" = 1'-0"
'12-B'
'12-A'
'11-A'
'11-B'
'11-C'
'13-A'
'12-C'
NOTE:
FOR CONTINUATION OF VERTICAL WEBS - SEE ELEVATION 'B-A'
SEE 'B-A' FOR CONTINUATION



BILL OF MATERIAL

REV.	ITEM	QTY	DESCRIPTION	MATERIAL	MATL. SPEC.	PATT./SYMBOL	REMARKS	REQ.#	JOB#

~GENERAL NOTES~

1- UNDERSIDE OF DECKS & FLATS IS ON MOLDED LINE.
MOLDED LINE OF TRANSV. FRS. & BHDS. IS ON AFT SIDE AFT OF MIDSHIPS & FWD. SIDE FWD. OF MIDSHIPS.
MOLDED LINE OF LONG. BHD. IS ON OUTBD. SIDE. THK. TO ℄ SHIP.

2- ALL BUTT WELDING IS TO BE IN ACCORDANCE WITH REF.#2
ALL OTHER WELDING TO BE AS NOTED.

3- WHERE STIFFENERS PASS THRU THE SLOTTED STRINGER THERE IS TO BE A PAIR OF MATCHED INTERMITTENT WELDS ON EACH SIDE OF THE INTERSECTION.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	7/09/71		1- REV. FACE PL. ON VERT. WEBS 2- REV. PL. WGT. DET. "6-D"	EME	ABS 9/29/71
		7,8	3- REV. STIFFS. TO AGREE IN ALL VIEWS.		
		11	4. RELOCATED REF. BHD. #229 IN VIEW "11-A".		USCG 9/28/71
		10, 13	5- REVISED LADDER TRUNK BHD. DETS. 10-A & 13-A TO SUIT DEVELOPMENT OF WEB FRS. TO SUIT DEVELOPMENT		OWNER 9/29/71
		4	6- REV. STIFF SIZES IN BHD. PROFILE & APPLICABLE VIEWS.		
		6	7- REV. DETS. "12-E" & "13-B" TO SUIT REF. #4.		
		8	8- ADDED CHOCKS TO VERT. WEBS DETS. "6-B", "6-C", "6-D" & "8-A" & ADDED DET. "8-E"		
			9. ADDED FLG. TO BRKT. DET. "8-C".		
		10	10. ADDED CHOCKS & HDR'S. TO DET. "10-A".		
		11	11- REV. WELDG. & STIFF. CALL-OUTS DET. "11-A".		
		13	12- ADDED STIFF. CALL OUT DET. "13-A".		
		14	13- INDICATED CHOCKS IN DET. 14-B & "14-D".		
		9	14- INDICATED CHOCKS IN DET. "9-A".		
			15. ADDED CORNER BRKTS. DET. #6-A. ITEMS #6-THRU 15 TO SUIT A.B.S. APPROVAL.		
		9 & 10	16. ADDED BRKTS. @ 30'-0", 38'-0" & 50'-6" ABV. ℄.		
2	12/20/71	7, 12	1) ON DETS. "7-E" "12-C" & "12-D" THE ABOVE BASE HEIGHTS HAVE BEEN ALTERED AS SHOWN ~ DEPARTURE Nº 059	[illegible]	[illegible] 12/27/71; USCG [illegible]; ABS [illegible]/72

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8"=1'-0" & AS NOTED DATE 14 MAY 1971
DRAWN E. M. EGE APPROVED
TRACED APPROVED
CHECKED R APPROVED [signature]

PLAN NO. H-4639-129-01-5 ALT. NO. 2

TRANSV. W.T. BHD. #227

APPROVAL LETTERS

HULL					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-16-71				
A.B.S.	6-24-71				
U.S.C.G.	6-16-71				
LLOYD'S R.S.					
U.S.P.H.S.					

REFERENCE PLANS

NO.	PLAN NO.	TITLE
14	H4639-129-02-4	2ND. DK FWD.
13	H4639-129-03-35	TRANSV. WEBS FWD. 3RD TO FOCSL. DK
12	H4639-129-03-27	LONG. BHD. & WEBS ABV. 2ND. DECK
11	129-06-13	CONTAINER STOWAGE #1-HOLD SH. 2
10	129-06-12	CONTAINER STOWAGE #1-HOLD SH. 1
9	129-05-3	SHELL EXP. FWD. #220
8	129-02-7	HATCH COAMING #1-HOLD
7	129-03-12	INBOTTM. PLTG., FLRS. & GRDRS. 223-246
6	129-02-5	UPPER DK. PLTG. 220-272
5	129-02-4	SECOND DK. PLTG. FR. #220-#272
4	129-04-14	3RD DK. PLTG. & BLW. #226-#246
3	H4639-129-03-46	LONG. BHD., TRANS. WEBS. BLW. FR. 221-228
2	STD. 129-00-2	PL. EDGE DETS. STD. BUTT WELDS
1	STD. 129-00-1	STRUCTURAL DETAILS

PC. MKS. ADDED
8-16-71

DATE OF ISSUE

ALTERATION	–	1	2	
ENGINEERING DISTRIBUTION	5/17/71	8/24/71	12/28/71	
MAIL: OWNERS 8/INSP.	4	5	3	
AMERICAN BUREAU	3	3	3	
LLOYD'S R.S.				
U.S.M.A. 9/INSP.		2	2	
U.S. NAVY				
U.S.C.G.	3	3	3	
JOINER CONT'R.				
INSPECTION: OWNER'S INSP.		1		
AM. BU. INSP.		1	1	
LLOYD'S INSP.				
U.S.M.A. INSP.				
U.S. NAVY INSP.				
U.S.C.G. INSP.		1	1	
OFFICE: HULL DRAFT. - 21	1P	1	1	
MACH. DRAFT. - 22	1P	1	1	
ELEC. DRAFT. - 23	1P	1	1	
OUTFIT. DRAFT. - 25				
ESTIMATING				
C.D. SCHAUB		1	1	
MISC.: PRODUCTION (BCD)				
ORDER DEPT.				
JOINER CONT. YARD				
PEPERSACK	2P			
TOTAL ENG'R. DIST.	15	20	17	
YARD DISTRIBUTION	5/17/71	8/24/71	12/28/71	
YARD: GPM				
PIECE RATE - 11	1P	1	1	
TEST DEPARTMENT				
A. J. DALBY	1P	3	3	
PLANNING	1P	1	1	
GROUND ASSEMBLY		6	4	
35 DEPT		4	2	
STRUCTURAL: NO. WAY				
NO. WAY				
NO. WAY				
NO. WAY				
STRUCT. SUPER.		2	2	
OPTICAL DETAIL-45	2P	2	2	
WET DOCK				
MACH'Y & OUTFIT: PIPE SHOP - 52		2	2	
OUTFIT. #1 PIER				
PIPE DRAFT. - 52		2	2	
BOILER SHOP - 58				
OUTSIDE MACH. - 60		2	2	
Q-MATIC		2	2	
ELECTRIC SHOP - 70				
SHEET MET. SHOP - 74		3	3	
COPPER SHOP - 51				
PAINT SHOP - 75		1	1	
WELDING		1	1	
OTHER: MOLD LOFT - 41		1	1	
BRACKET SHOP				
ORDER DEPT.		1	1	
TOTAL YARD DIST.	5	[illegible]	30	

SQ. FT.

H-25

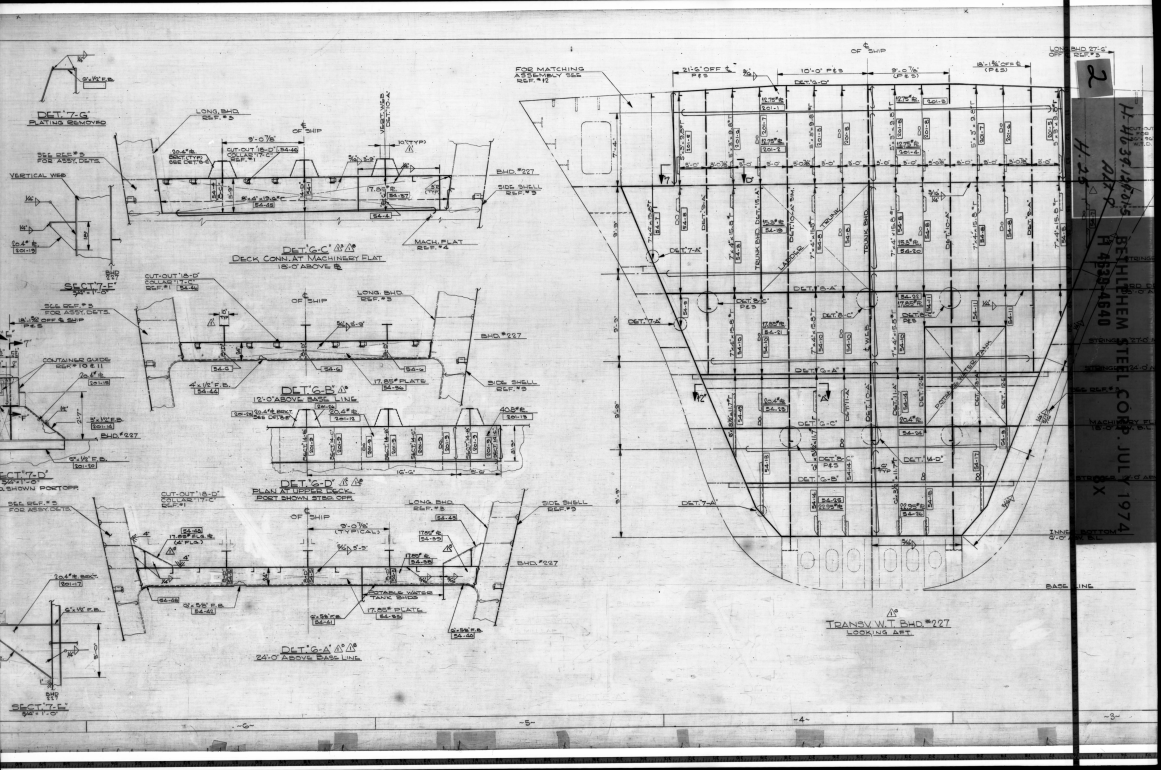
~3~ ~2~ 1

H-4639-129-01-5 TRANSV. W.T. BHD. #227

1

H-4639-129-01-5 ALT 2 H-25

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



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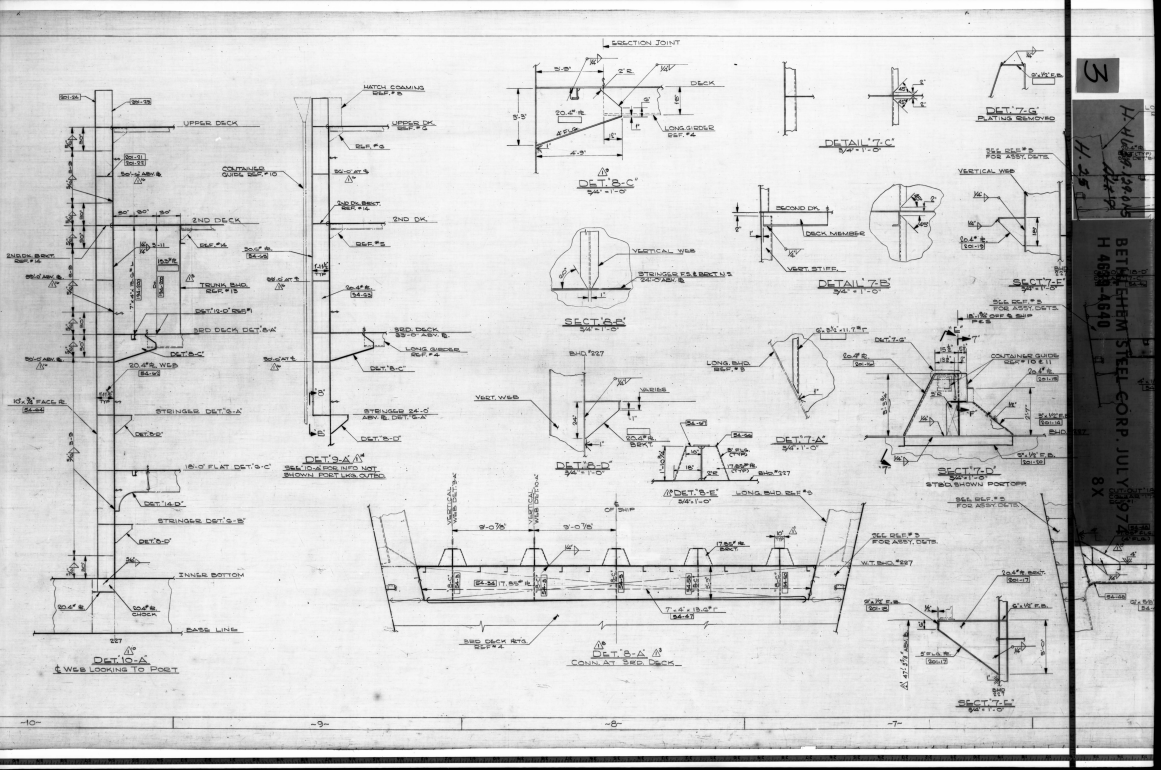
H-4523-4640
H-4523-4641
2



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H-46-39.29.0145
Ad. 4
H. 25

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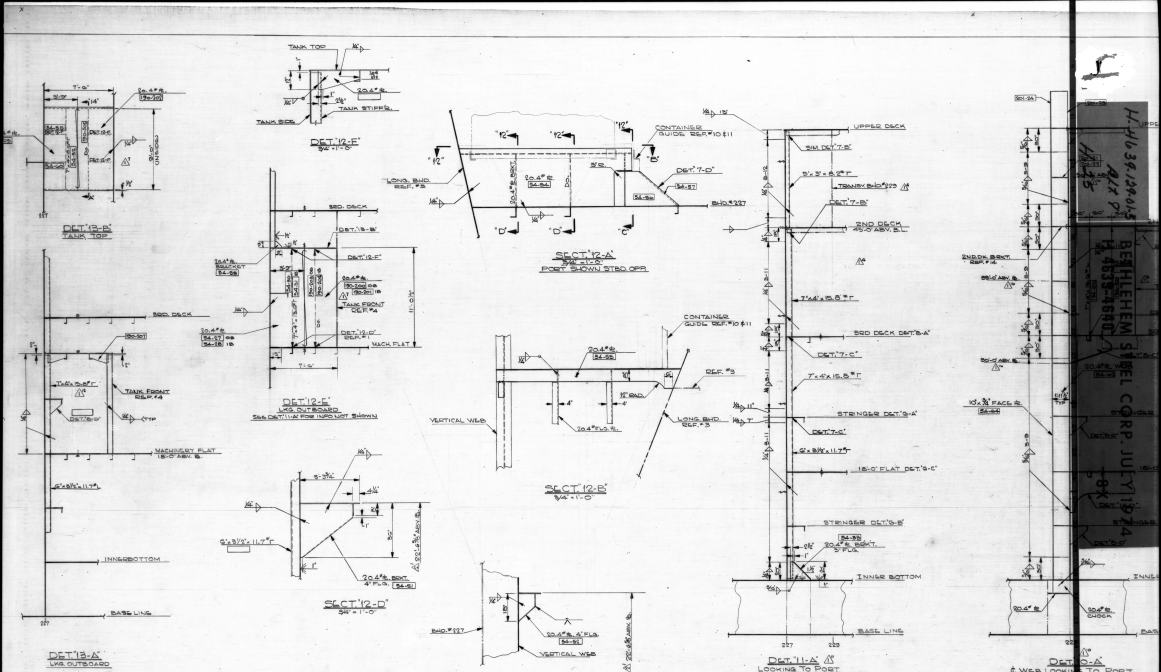
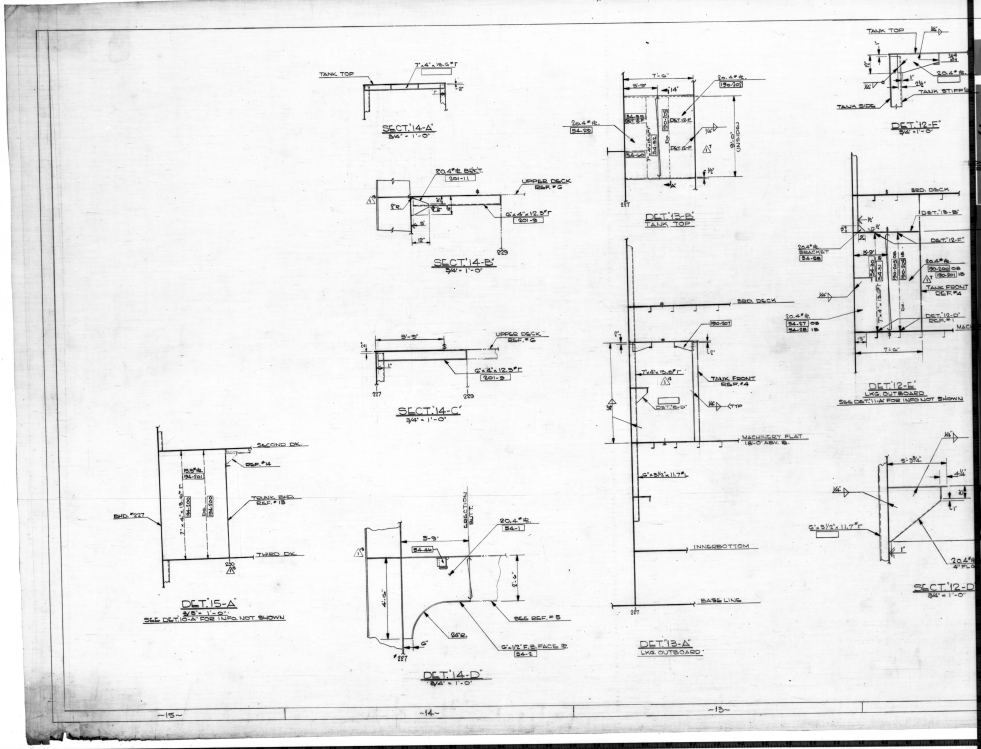
H 4639-4640
8X



BETHLEHEM STEEL CORP. JULY 1974



5

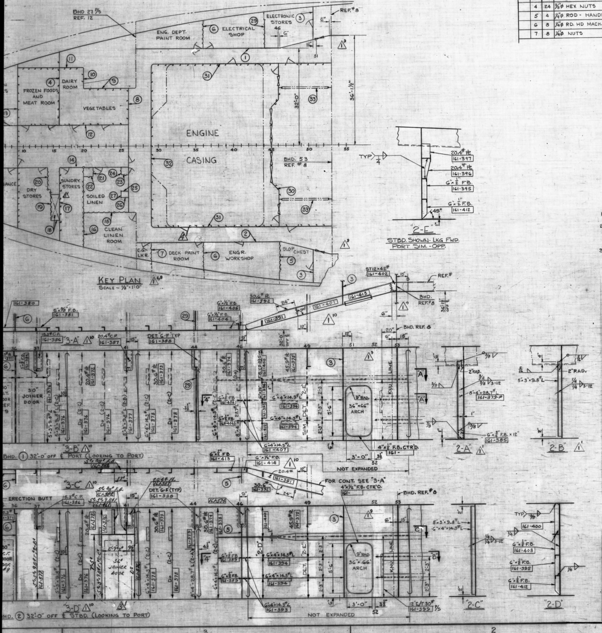
H-4639-129-015
H-4639-4640

BETHLEHEM STEEL CORP. JULY 1974

8X

REV.	ITEM	QUAN	DESCRIPTION	MAT'L.	MAT'L. SPEC.	PATT. OR SYMBOL#	REMARKS	REQ. No.	JOB No.
	1	4	1/4φ ROUND HD. MACH. BOLTS	STEEL	.	DET. "10-L"	20NC2 × 1" LG.		
	2	4	1/4" HEX NUTS	STEEL			FOR ITEM #1		
	3	24	3/8φ RD. HD. MACH. BOLTS	↑			16NC2 1" LG.		
	4	24	3/8φ HEX NUTS				FOR ITEM 3		
	5	4	1/4φ ROD - HANDLES				12" LG DET. "13-B"		
	6	8	1/4φ RD. HD MACH. BOLTS	↓			20NC2 - 1 1/2" LG		
	7	8	1/4φ NUTS	STEEL			FOR ITEM 6		

BILL OF MATERIAL ~ PER SHIP



GENERAL NOTES

1. TWEEN DECK HEIGHT: 2ND DK. - UPPER DK. = 11'-0" AT CTR.
2. 2ND DECK: NO CAMBER OR SHEER.
   UPPER DECK: NO SHEER. CAMBER: LEVEL AT CTR. TO 10'-0" OFF ℄ P/S. 24" STRAIGHT LINE FROM 10'-0" OFF ℄ TO 47'-6" OFF ℄ P/S.
3. FOR DETAILS OF WELDING NOT SHOWN, SEE REF. #2.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1			1) ADDED CUTOUTS TO STIFFNERS IN WAY OF GIRDER COLLARS AT DETS. "2-A", "2-B", "6-E", "15-E" & "15-H". 2) IN DET. "8-F": DELETED INDIC. OF GIRDER AT FR. 16 TO AGREE WITH REF. #3. 3) IN DET. "9-D": INDICATED 3 1/2"φ SCH. 80 PIPE AT FR. 20 TO AGREE WITH DET. "8-D" & ADDED INDICATION OF DUMBER WAITER OPENING BET. FRS. 20-21. 4) DET. "12-B": REVISED BHDS. #5 & #29 FROM NON TIGHT TO WATER TIGHT INTEGRITY. 5) IN DET. "12-G": ADDED 14'-0" MID SECTION OF TRANSVERSE BHD. #28. 6) IN KEY PLAN, BHD. 12: RECONCILED INDIC. OF REFRIG. DOORS WITH DET. "7-H". 7) IN DETS. "6-B" & "7-B", 15'-0" OFF ℄ P/S: ADD INDICATION OF STIFFENER DET. "15-D" SIM. 8) REVISED KEY PLAN TO AGREE WITH ABV. ITEMS WHERE APPLICABLE 9. IN KEY PLAN, 3-A, 3-B & 3-C: REV. INDIC. OF BHD. AT FR. 53. BHDS. (1) & (2) REV. TO SUIT.	F.E.W.	OWNER 6/1/71 ABS 6/1/71 USCG 6/1/71
	4/28/71	3	10) ALTERED SLOPE OF BHD'S 1 AND 2 - DETS "3-A", "3-B", "3-C" AND "3-D" TO 9" FWD 46 & 6" AFT 53.	C.B.P.	
2	7/28/71	8,9	1. IN "8-D" ADDED STAN. 30'-2 1/4" OFF ℄ & ADDED DET "9-E".	P.K.	J. USCG 9-13-71 ABS 9-16-71
		7,8	2. IN "7-D" ADDED CHOCK 11'-3" OFF ℄; ADDED DET. "8-A". ALT. TO SUIT DESIGN DEPT. LETTER DATED 6-25-71		
	7/14/71	5,6,7,8,9,10,11,12	3. IN "5-B", "6-B", "7-B", "7-D", "7-K", "7-H", "7-F", "9-B", "11-H", "12-B" CHANGED THE WELDING TO THE 2ND DK. TO 3/16" DOUBLE CONTINUOUS, TO SUIT OWNERS APP'L, DATED 6-1-71	P.K.	J.
3	1/26/72	3	1. IN "3-D" RELOCATED JOINER DOOR FROM FR. 37 TO 12" AFT. FR. 41.	P.K.	
		14, 12	2. IN "14-D", ADDED INDICATION OF DOOR 18 1/2" AFT. FR. 34 (STB'D) & REVISED STIFF'G TO SUIT; DOOR 18 1/2" FWD. FR. 39 IS PORT ONLY; ADDED "12-F". ALT. TO SUIT DEPT. 22 MEMO DATED 1-20-72.		N.J.Y. 4-27-72 USCG 6-30-72 ABS 6/1/72
	3/16/72	12	3. IN "12-D" ADDED CUTOUT & COLLAR AROUND LONGS		

ALTERATIONS (CONTINUED)

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
3	4/26/72	12	4. IN "12-G" ADDED ERECTION BUTT 5'-0" OFF ℄ (STB'D ONLY)	P.K.	J.
4	7/27/72	3	1. IN "KEY PLAN", BHD. #31 RELOCATED INDICATION OF DOOR TO 18 1/2" AFT. FR. 34, TO SUIT OWNER'S APP'L DATED 5-26-72	P.K.	
	8/8/72	9, 10, 3	2. IN "9-D", RELOCATED JOINER DOOR FROM FR. 7 TO 8, & AMENDED STRUCTURE TO SUIT; ADDED "10-M", "10-N" (Y15 92)	P.K.	

ALTERATIONS (CONTINUED)

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
5	10/26/72	2,8	1. IN "7A, 7B", "KEY PLAN", BHD @ 16 (STBD.), RELOCATED STIFFENERS FROM THE AFT SIDE TO THE FWD. SIDE (H4640 ONLY). THIS ALT. RELEASES HOLD-UP ON Y15-H-119.	P.K.	J. USCG 11/24/73
6	11/20/73	14	1. IN "14-B" DELETED 9 1/2" × 13 3/4" ACCESS OP'G AND COVER PL. (STB'D ONLY) 12'-10" OFF ℄; DELETED DET. "13-B". ALT. TO SUIT VENDOR'S EQUIPMENT	P.K.	

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 26 FEB 1971
DRAWN C.B. PEARRE APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639-129-01-6 ALT. NO. 6

MISC. BHDS. ON 2ND DECK AFT. FRAMES 3 TO 53

APPROVAL LETTERS

HULL APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	3-24-71				
A.B.S.	3-10-71	1-9-73			
U.S.C.G.	4-2-71	9-22-72			
LLOYD'S R.S.					
U.S.P.H.S.					

NO.	PLAN NO.	TITLE
12	H4639-129-03-50	AFT PEAK FRMG. 45' FLAT & BEL. FRS. B TO 5
11	H4639-129-03-38	WEB FRS. 24, 27, 31, 34, 37 & 41 IN MACHY SPACE
10	EASTERN COLD STORAGE CO. 803-1	ARRG'T & STOWAGE DETS. REFRIGERATED SPACES
9	-141-1	DOOR SCHEDULE
8	-03-33	WEB FRS. 44, 46, 49, 53, 57 & 60 IN MACHY SPACE
7	-03-23	LONG'L BHD. & TRANS. WEBS ABV. 2ND DK. FRS. 53-79
6	-05-1	SHELL EXPANSION AFT. FR. 64
5	-03-29	AFT. PEAK FRMG. 35'-0" FLAT TO UP. DK. FR. 6-19
4	-02-2	2ND DK. PLTG. FRS. 20-64
3	H4639-129-02-3	UPPER DECK PLTG. FRS. B - 53
2	STD-129-00-2	PLATE EDGE DETAILS FOR STD. BUTT WELD
1	STD-129-00-1	STRUCTURAL DETAILS

REFERENCE PLANS

O.D. MARKS		
10-12-72		
12-29-72	7-9-71	3-16-72
	7-23-71	4-26-72
	2-3-72	6-5-72

DATE OF ISSUE

ALTERATION	
ENGINEERING DISTRIBUTION	
MAIL: OWNERS 9/INSP.	5 5 5 3 4 3 4
AMERICAN BUREAU	3 3 3 3 3 3 3
LLOYD'S R.S.	
U.S.M.A. 3 INSP.	2 2 2 2 2
U.S. NAVY	
U.S.C.G.	3 3 3 3 3 3 3
JOINER CONT'R.	
PEPERSACK	2 2 2
INSPECTION: OWNER'S INSP.	1 1 1 1
AM. BU. INSP.	1 1 1 1 1
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	1 1 1 1 1 1
OFFICE: HULL DRAFT. - 21	
MACH. DRAFT. - 22	
ELEC. DRAFT. - 23	
OUTFIT. DRAFT. - 25	
ESTIMATING	
MISC.: C.D. SCHAUB	
PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	
YARD DISTRIBUTION	
YARD: CPM	
A.J. DALTON	
PIECE RATE - 11	
TEST DEPARTMENT	
PLANNING	
GROUND ASSEMBLY	
35 DEPT.	
STRUCTURAL: NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	
OPTICAL DETAIL - 45	
WET DOCK	
MACH'Y & OUTFIT: PIPE SHOP - 52	
OUTFIT. #1 PIER	
PIPE DRAFT. - 52	
BOILER SHOP - 58	
OUTSIDE MACH. - 60	
Q-MAT'L	
ELECTRIC SHOP - 70	
SHEET MET. SHOP - 74	3 3 2 3 3 3 3 3 3
COPPER SHOP - 51	
PAINT SHOP - 75	
WELDING	
OTHER: MOLD LOFT - 41	
BRACKET SHOP	
ORDER DEPT.	
TOTAL YARD DIST.	

ALT. 3 2 — 4639, 40 - ALT. 3 2 — 4639, 40 - ALT. 4 3 — 4639, 40 - ALT. 5 1 — 4639, 40 - ALT. 5 1 — 4640 - ALT. 6

3 2 1

H-26

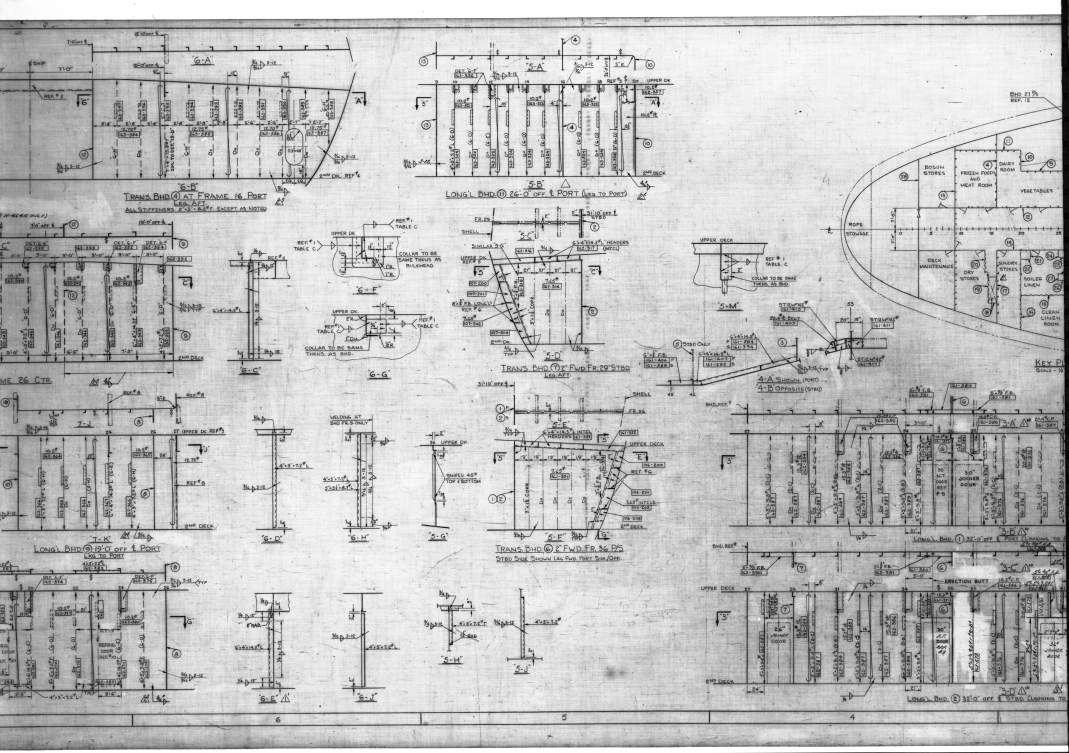
38.75 SQ. FT.

F 1

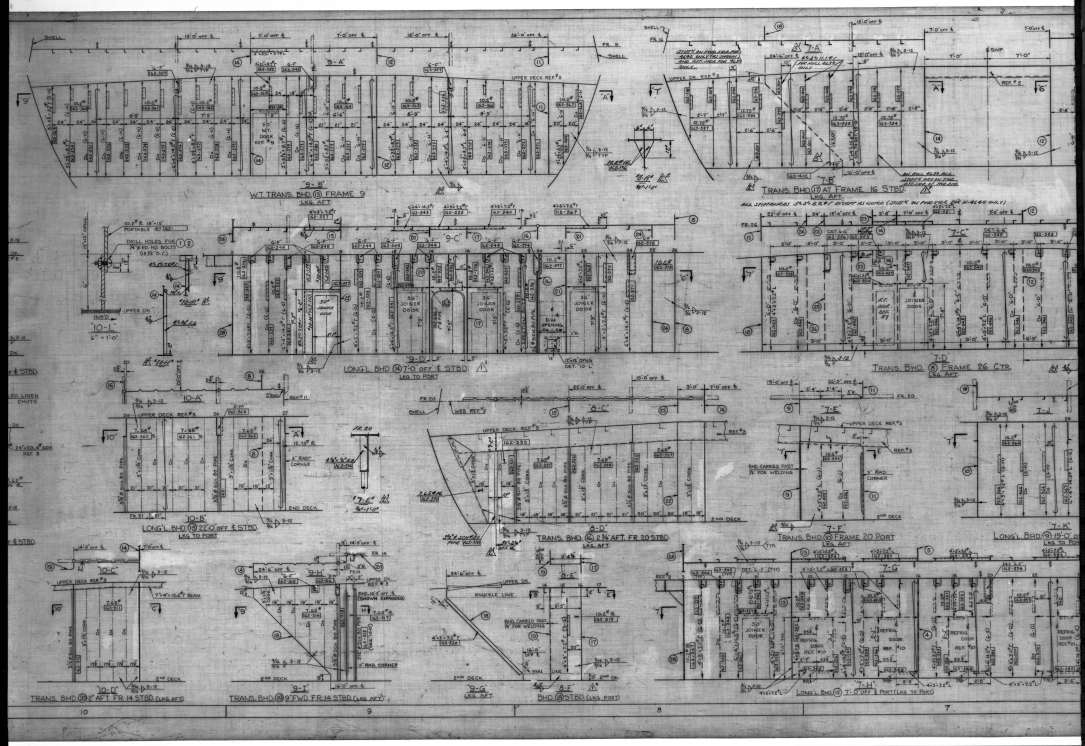
H-4639-129-01-6 ALT. 6

H. 26

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

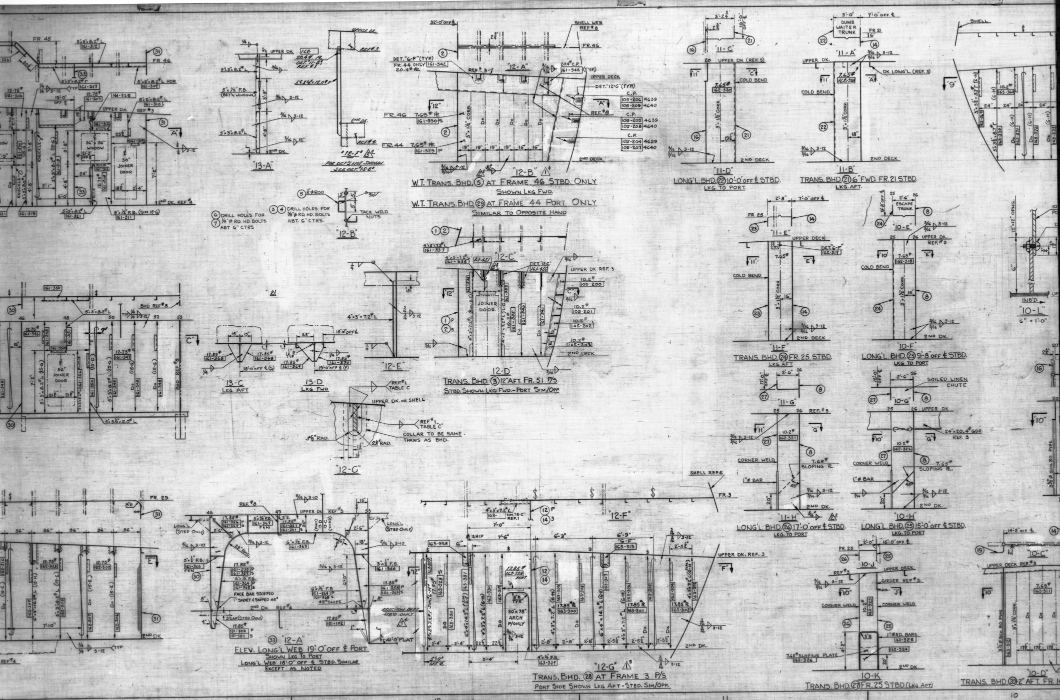


F 2
H-4639.129.01-6
Alt 6
H 26
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

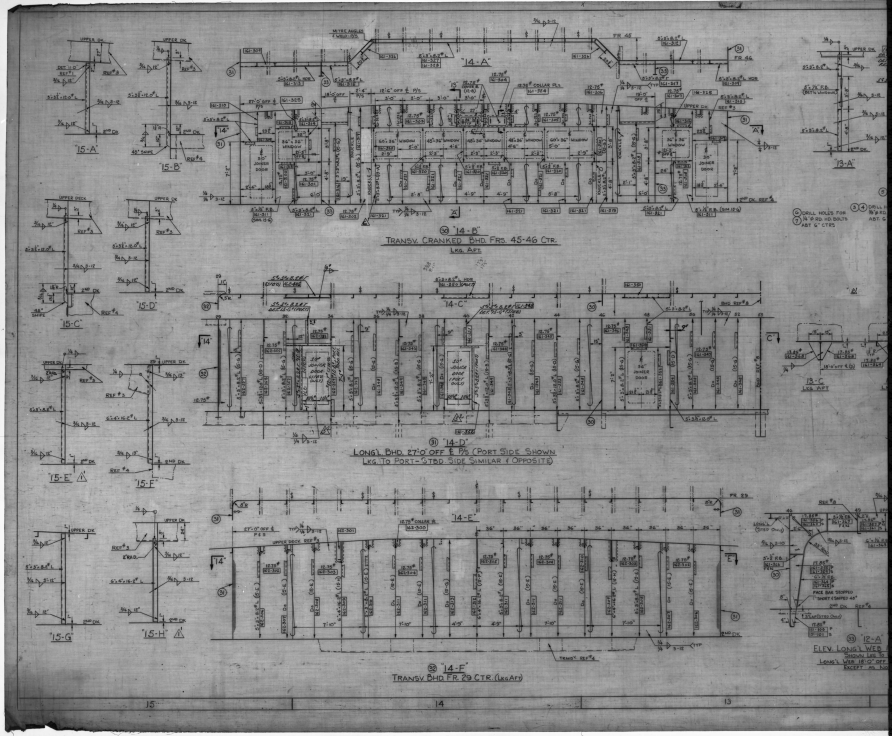


H-4639-129-01-6
ALT 6
H 26

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



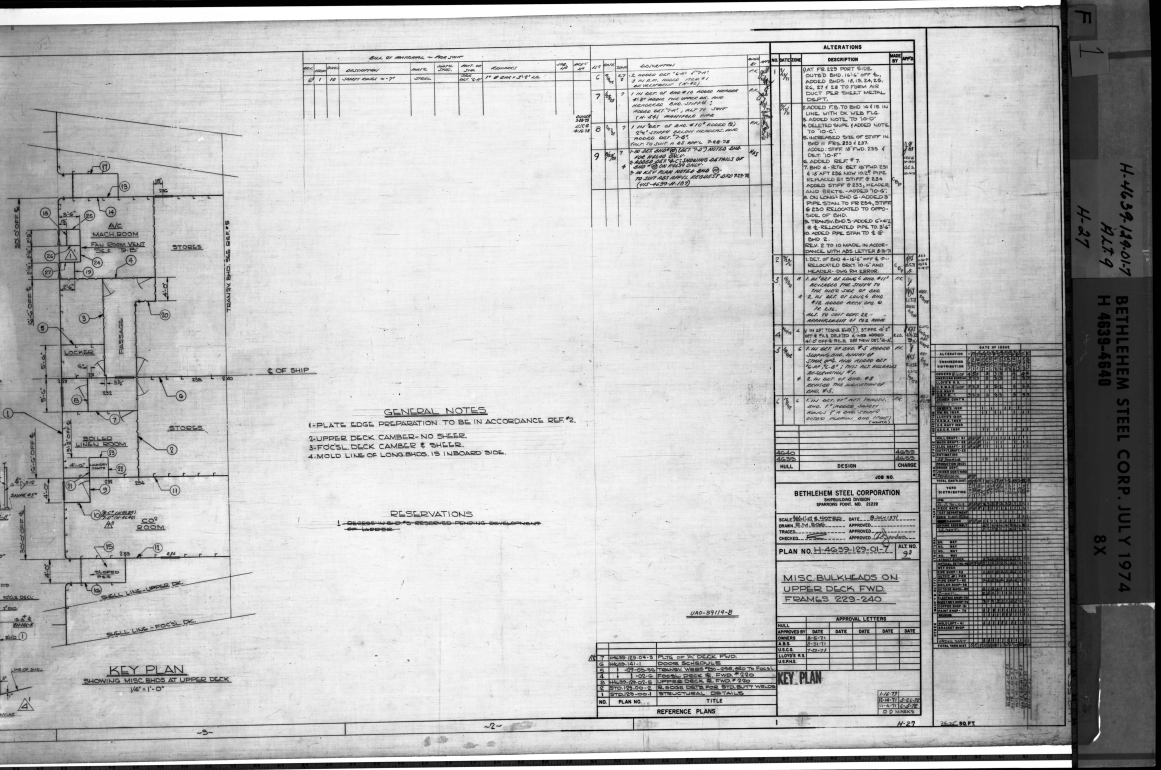
F
4
H-4639.129.016
ALT. 6
H. 26
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 5

H-4639.129.01-6
ALT. 6
H 26

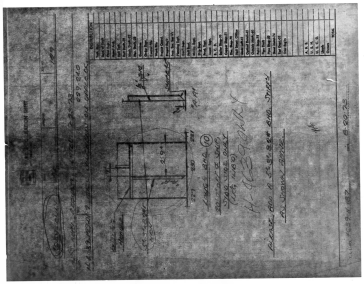
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

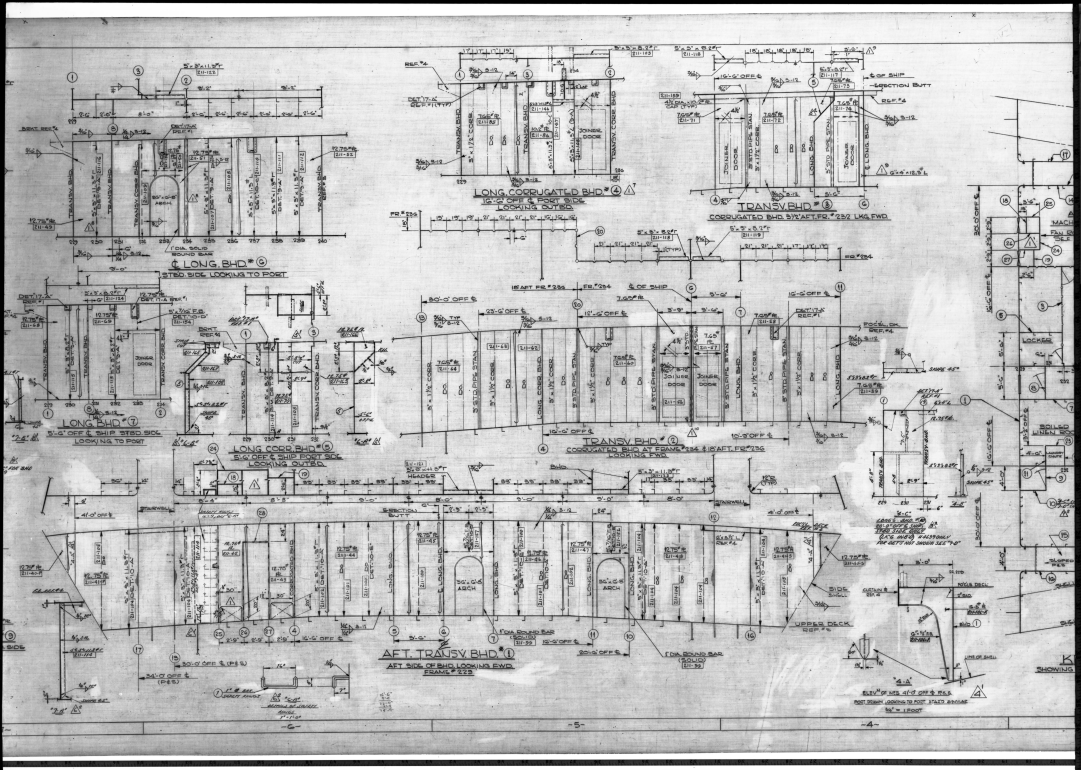


BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
H-4639.129-01-7
ALT. 9
H-27
F 1
BALL OF MATERIAL - FOR SHIP
ALTERATIONS
DESCRIPTION
DATE
DESIGN
CHANGE
JOB NO.
BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219
SCALE
DRAWN
TRACED
CHECKED
DATE
APPROVED
PLAN NO. H-4639-129-01-7
ALT. NO. 9
MISC. BULKHEADS ON UPPER DECK FWD. FRAMES 229-240
APPROVAL LETTERS
KEY PLAN
REFERENCE PLANS
H-27
GENERAL NOTES
1-PLATE EDGE PREPARATION TO BE IN ACCORDANCE REF. #2.
2-UPPER DECK CAMBER-NO SHEER.
3-FOCSL DECK CAMBER & SHEER.
4-MOLD LINE OF LONG. BHDS. IS INBOARD SIDE.
RESERVATIONS
KEY PLAN
SHOWING MISC. BHDS AT UPPER DECK
1/4" = 1'-0"
A/C MACH. ROOM
FAN ROOM VENT SEE 5 & 6
STORES
LOCKER
PASSAGE
BOILER WIDEN ROOM
STORES
CO2 ROOM
SHELL LINE - UPPER DK.
SHELL LINE - FOCSL DK.
TRANSV. BHD. SEE REF. #5
℄ OF SHIP

Sht 2

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 6X

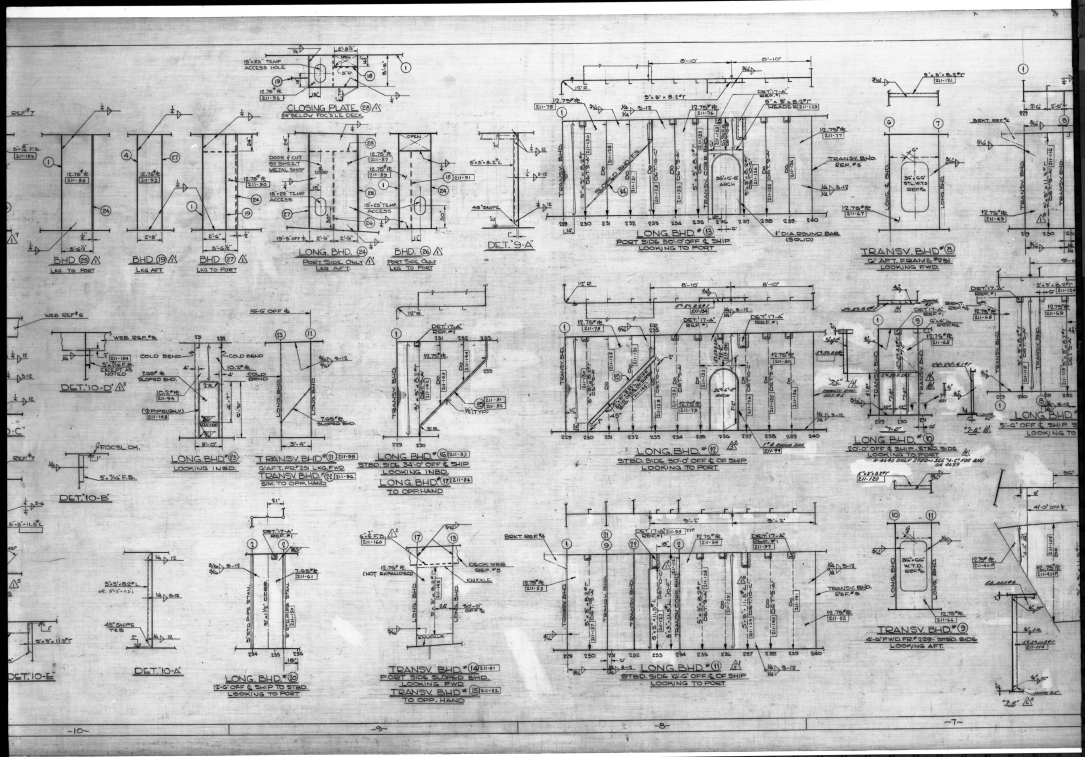




F 2

H-4639, 1A9-017
ALT. 9
H-27

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 3

H-4639.129-017
H.L.T.9
H-27

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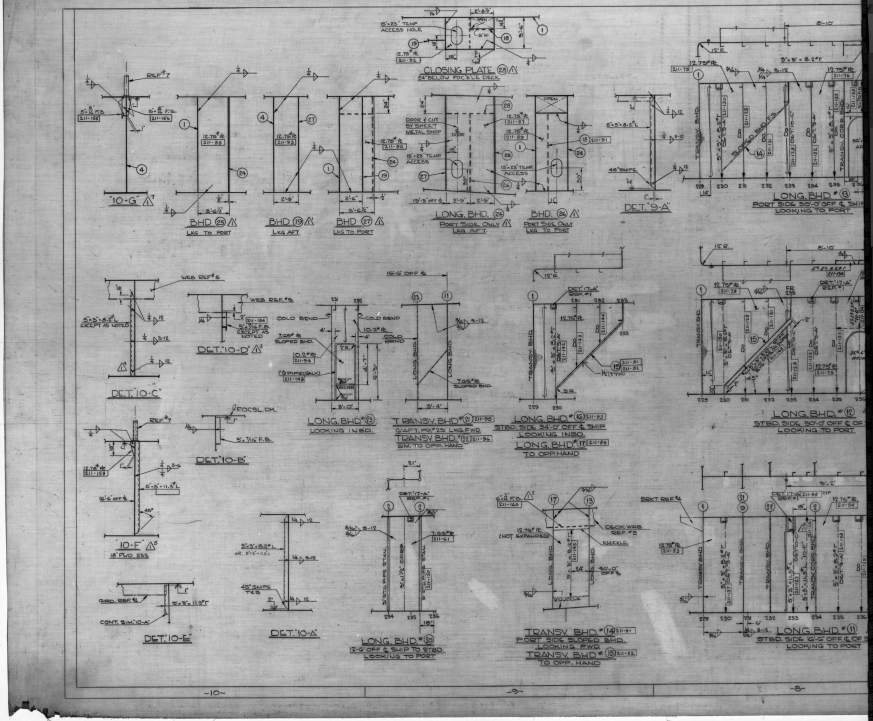
H 4639-4640
8X



F 4

H-4639-129-01-7
PLT 9
H-27

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

BILL OF MATERIAL - (QTY. FOR ONE SHIP)

SYM	ITEM NO.	QTY.	DESCRIPTION	MATERIAL	MAT'L SPEC	PATTERN NO. OR SKETCH	REMARKS	REQ'D	JOB NO.
	1	1	VERT. LADDER - L = AS NOTED	STEEL	ABS GR. MAT'L 'B' & 'AH'		SEE BELOW FOR MATERIAL		
	2	1							
	3	1							
	4	1							
	5								
	6								
	7								
	8								
	9	4	STUDS - 5"ø FR - L=4'-0"	STEEL			2 EA. REQ'D FOR ITEM 1		
	10	4	" - L=1'-10"				2 EA. REQ'D FOR ITEM 2		
	11								
	12								
	13	AR	RUNGS - 1"ø SQ. BAR, L = 1'-5"				17 REQ'D "L" GRADE, 16 REQ'D "AH" GRADE		
	14								
	15	54	" - L=1'-0"±"				2 EA. REQ'D FOR ITEMS 1 & 2		
	16	8	HARD. SUR. 4"x3"x 1/4" - L = 2'-0"				2 EA. REQ'D FOR ITEMS 1 & 2		

NOTES

GENERAL NOTES

1) ALL WEB & INTERMEDIATE FRAMS. RATING IS TO BE 16-70# ETS. UNLESS OTHERWISE NOTED.
2) UNDERSIDE OF DECK PLATE & STUBS IS ON THE MOLDED LINE. MOLDED LINE OF TRANS'V. FRAMES & BHDS. IS ON AFT SIDE OF THOSE AFT OF WISHBITS AND FWD. SIDE ON THOSE FWD. OF WISHBITS. MOLDED LINE OF LONG'L BHDS. (CL-CL) IS ON OUTBOARD SIDE; THICKNESS IS TAKEN E OF SHIP.
3) ALL BUTT WELDING IS TO BE IN ACCORDANCE WITH PAR. 5. ALL OTHER WELDING IS TO BE 1/4" D-3-G INTERMITTENT, UNLESS OTHERWISE NOTED. (SEE G.N. 5)
4) SECTIONS DRAWN LOOKING FORWARD & SLEVATIONS DRAWN LOOKING OUTBOARD. ALL VIEWS DRAWN FROM PORT SIDE SHOWN, STARBOARD SIDE SIMILAR & OPPOSITE HAND.
5) WHERE PLATING IS TO BE WELDED TO, THROUGH SLOTTED HOLES OR SLOTS, AS SHOWN ON PLANS, PAIR OF INTERMITTENT WELDS ON EACH SIDE OF EACH INTERSECTION. ALL UNBEVELLED STIFFENING SHALL HAVE A MATCHED FAIR AT EACH END.

3-D
OPENING IN LONG'L BHD. - 4'-0" EXPANDED VERTICALLY

ALTERATIONS

NO.	DATE	SYM.	DESCRIPTION	SHIP BY	APP'D
			THIS PLAN IS A DUPLICATE OF PLAN NO. 129-169-09-12 DATED 1-29-74 MANUALLY CORRECTED TO AGREE WITH AS BUILT CONDITION. ALTERATIONS SHOWN ARE TO CORRECT DISCREPANCIES ONLY. NO DESIGN CHANGE.		
1			1 REVISED SHEET 1 & 2 TO ALTER AS BUILT CONDITION & INCREASE SUPPORT MADE 1 REFERENCE		
2			2 IN WEB 84" "AH" FRAMS ON PARTITION OF 10-4" FL. WAY (PORT) REVISED FRM. BRKDWN. BELOW DIP OF 2ND DK. 2 IN WEB 84"x4" FRAMS ON UNDERSIDE OF THE 84"x4" FL. W. F. FRAMS IN SIDE OF STIFFENER; FRAMS REF. THIS	RC	4-1-74
3			1 1 FRAMS 84"x4" ALT TO SUIT AS BUILT CONDITION	RC	4-1-74
4			1 IN DET. 6 D REFERENCED TEMPORARY ACCESS OPENING AT 10 FRAMES BHD. 2 ADDED RELETS	RC	4-1-74
5			1 IN DET. 6 ADDED THE DET. 7 & DETAILS SHOT 1 (TEC-N-139-A)	RC	4-1-74
6			1 ADDED CABLE REFERENCE TO REMOVABLE ACCESS AT 84"x4" 2 ADDED RELETS	RC	4-1-74

HULL DESIGN CHANGE

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8"=1'-0" UNLESS NOTED OTHR. DATE 1-29-74 (REVISED 1-31-74)
DRAWN JCB CHECKED APPROVED
TRACED APPROVED
DESIGNED APPROVED

PLAN NO. H-4639-169-09-12 ALT. NO. 6

LONG'L BHD. TRANS'V. WEBS BELOW 2ND DECK & WING BHDS - FRS 64-78

APPROVAL LETTERS

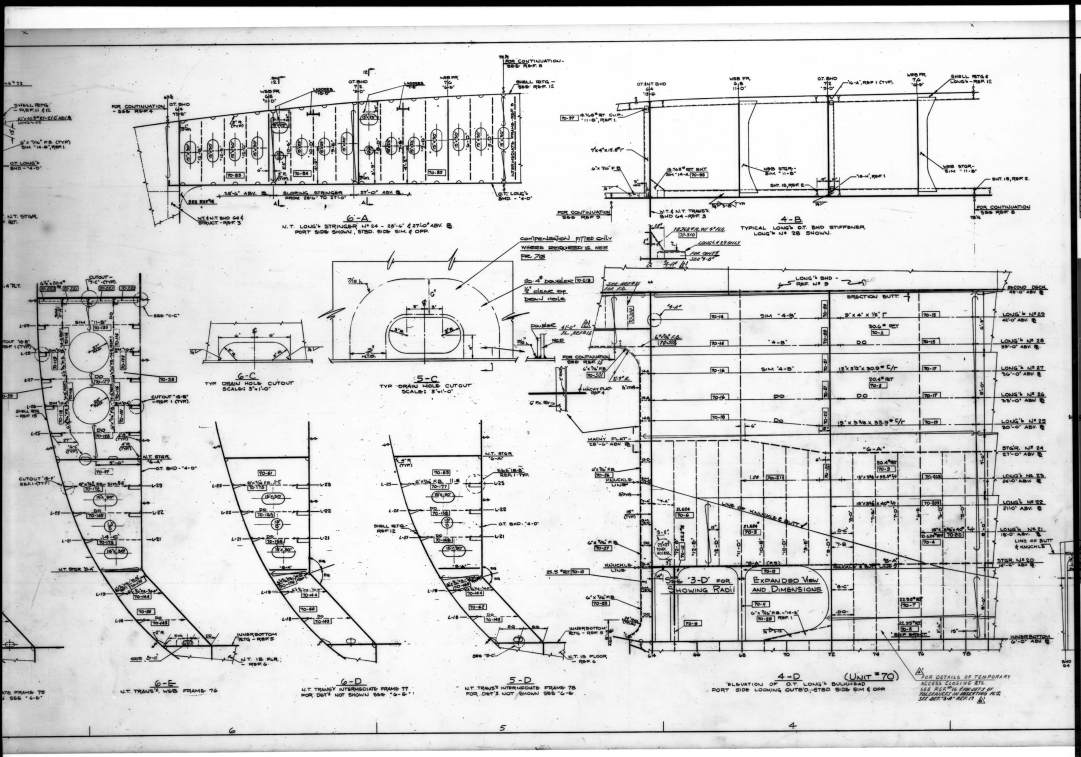
	APPROVED BY	DATE	DATE	DATE	DATE	DATE
HULL	[illegible]					
OWNER	1-14-70					
USCG	1-29-74					
LLOYD'S	[illegible]					
HERAS						

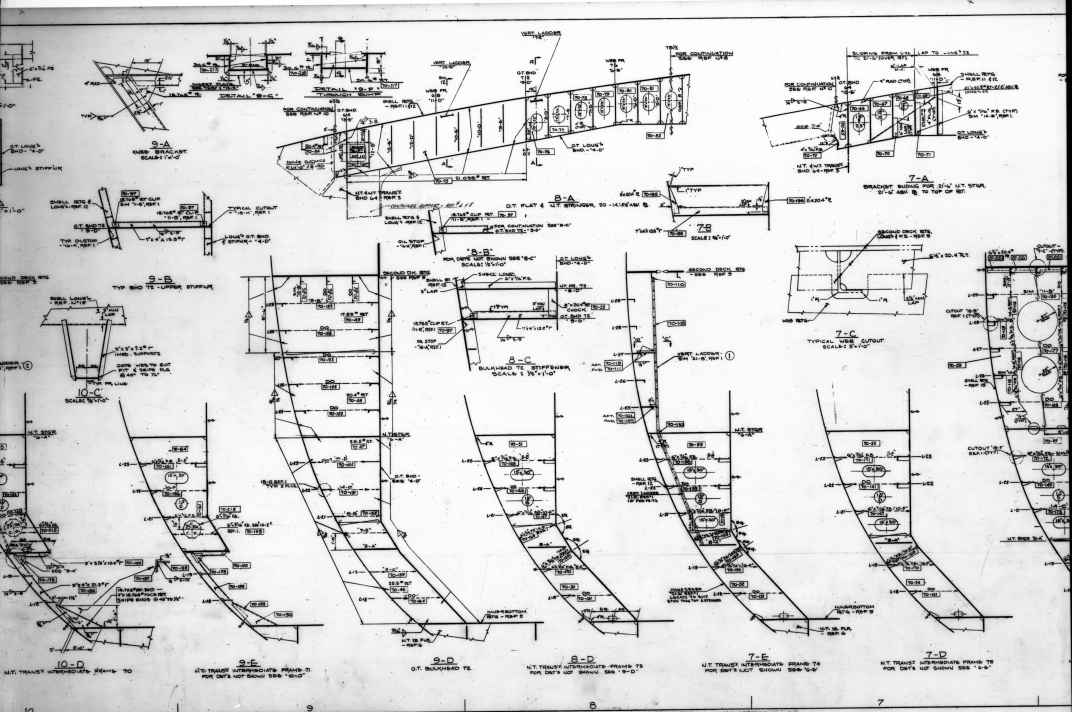
NO.	PLAN NO.	TITLE
		REFERENCE PLANS

UNG-39446-A

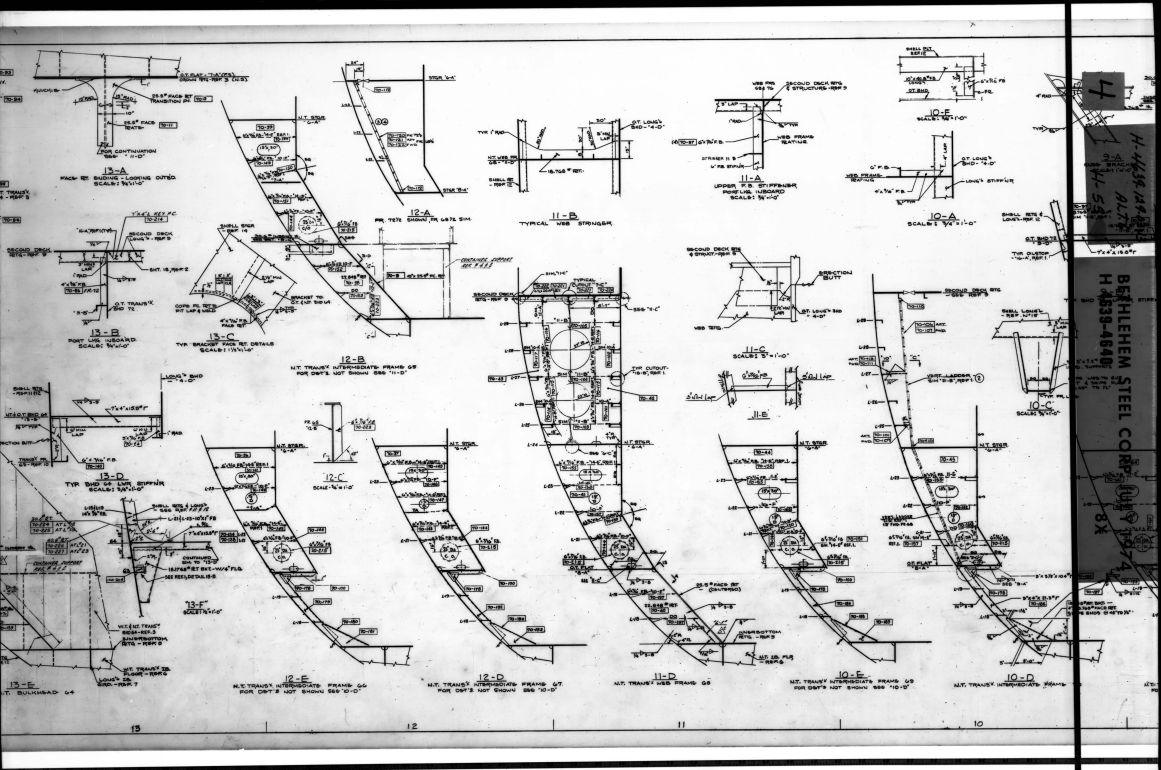
H-55

H-4639-4640 ALT 6
H-55
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

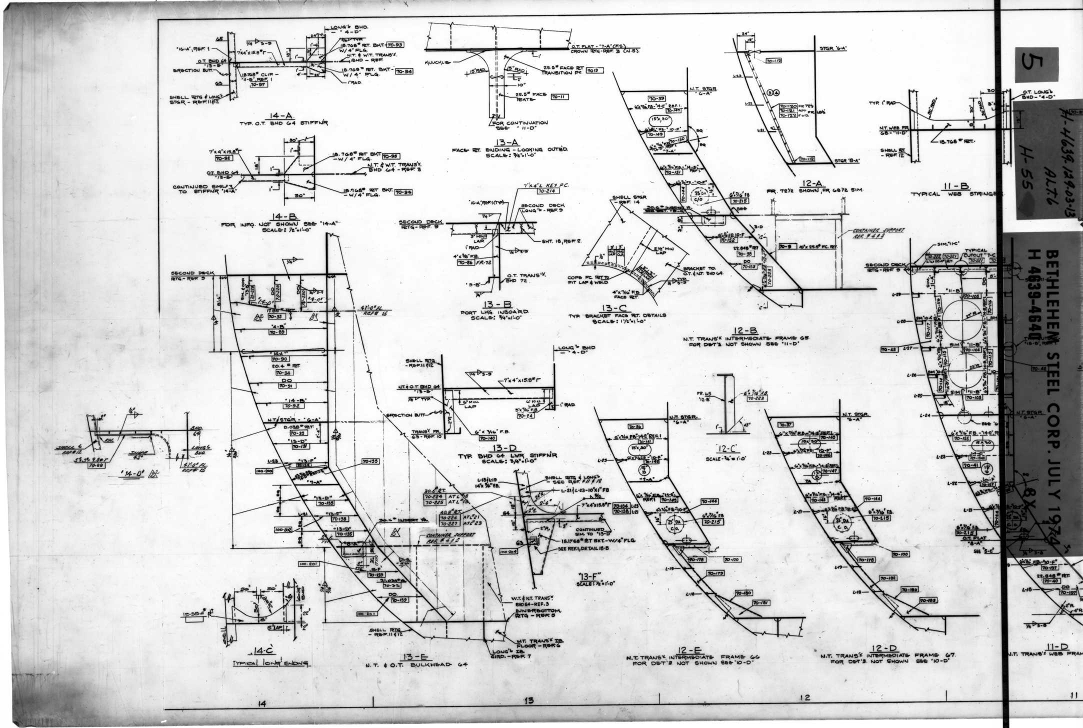

6-A
N.T. LOWER STRINGER - LP 24 - 28'-6" & 21'0" ABV. B
PORT SIDE SHOWN, STBD SIDE SIM. & OPP.
4-B
TYPICAL LOWER DT. SHD STIFFENER
LOWER LP 28 SHOWN.
6-C
TYP. DRAIN HOLE CUTOUT
SCALES 1"x1"-0"
5-C
TYP. DRAIN HOLE CUTOUT
SCALES 1"x1"-0"
6-E
N.T. TRANS'L WEB FRAME 76
6-D
N.T. TRANS'L INTERMEDIATE FRAME 77
FOR DET'L NOT SHOWN SEE "6-E"
5-D
N.T. TRANS'L INTERMEDIATE FRAME 75
FOR DET'L NOT SHOWN SEE "5-E"
4-D
(UNIT #70)
ELEVATION OF O.T. LOWER SUNDECK
PORT SIDE LOOKING OUTBD. STBD SIDE SIM. & OPP.
SEE "3-D" FOR EXPANDED VIEW AND DIMENSIONS
SHOWING RADII
EXPANDED VIEW AND DIMENSIONS
SEE DETAILS OF TEMPORARY
BEVELS FURNISHED BY
SEE PLATE "A" FOR DETAILS OF
TEMPORARY CONSTRUCTION PLATE
SEE SECTION "A-A"
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

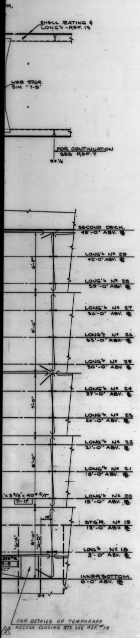


BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
3
8X



BETHLEHEM STEEL CORP. JULY 1974
H-4639-4640


14-A
TYP. O.T. BHD 64 STIFFNR
14-B
FOR INFO. NOT SHOWN SEE "14-A"
SCALE: 1/2"=1'-0"
'14-D'
14-C
Typical long' ending
13-A
FACE PLT. ENDING - LOOKING OUTB'D.
SCALE: 3/4"=1'-0"
13-B
PORT LKG. INBOARD.
SCALE: 3/4"=1'-0"
13-C
TYP. BRACKET FACE PLT. DETAILS
SCALE: 1 1/2"=1'-0"
13-D
TYP. BHD 64 LWR STIFFN'R
SCALE: 3/4"=1'-0"
"13-F"
SCALE: 1/2"=1'-0"
13-E
N.T. & O.T. BULKHEAD 64
12-A
FR. 72 1/2 SHOWN, FR 68 1/2 SIM.
12-B
N.T. TRANS'L INTERMEDIATE FRAME 65.
FOR DET'S. NOT SHOWN SEE "11-D"
'12-C'
SCALE - 3/4" = 1'-0"
12-E
N.T. TRANS'L INTERMEDIATE FRAME 66
FOR DET'S NOT SHOWN SEE "10-D"
12-D
N.T. TRANS'L INTERMEDIATE FRAME 67.
FOR DET'S. NOT SHOWN SEE "10-D"
11-B
TYPICAL WEB STRINGER
11-D
N.T. TRANS'L WEB FRAM
14
13
12
11
5
H-4639.129.03.13
ALT. 6
H-55
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



BILL OF MATERIAL (QTY FOR ONE SHIP)

REV.	ITEM	QTY	DESCRIPTION	MATERIAL	MAT'L SPEC.	PATTERN # OR SYMBOL#	REMARKS	REQ#	JOB #
	1.	2	VERT. LADDER - X = AS NOTED	STEEL	ABS. OR EQUIV.	"21-B", REF. 1	SEE BELOW FOR MATERIAL		
	2.	2	↓ ↓ ↓	↓	↓	↓	↓ ↓		
	3.								
	4.								
	5.								
	6.								
	7.								
	8.								
	9.								
	10.								
	11.	4	STGRS - 3"x1/2" F.B. L = 40'-0"	STEEL			2 EA REQ'D FOR ITEM 2		
	12.	4	↓ - ↓ L = 42'-0"				2 EA REQ'D FOR ITEM 1.		
	13.	164	RUNGS - 1" SQ. BAR L = 1'-3"				32 EA REQ'D FOR ITEM 1 & 2		
	14.	16	CLIPS - 3"x 1/2" F.B. L = 0'-8"				2 EA. REQ'D FOR ITEMS 1 & 2.		
	15.	16	↓ - ↓ ↓ L = 0'-4"				2 EA. REQ'D FOR ITEMS 1 & 2		
	16.	24	INTERMED. SUPTS - 3"x3"x7.2# L = 15"	STEEL					

GENERAL NOTES

1) ALL WEB & INTERMEDIATE FRAME RATING IS TO BE 19.584# RATE UNLESS OTHERWISE NOTED.

2) UNDERSIDE OF DECKS, FLATS, & STRINGERS IS ON THE MOLDED LINE. MOLDED LINE OF TRANS'V. FRAMES & BHDS IS ON AFT SIDE OF THOSE AFT OF MIDSHIPS AND FWD. SIDE ON THOSE FORWARD OF MIDSHIPS. MOLDED LINE OF LONG'L. BHD. ("4-D") IS ON THE OUTBOARD SIDE; THICKNESS IS TOWARD ℄ OF SHIP.

3) ALL BUTT WELDING IS TO BE IN ACCORDANCE WITH REF. Nº 2. ALL OTHER WELDING IS TO BE 1/4" ▷ 3-6 INTERMITTENT, UNLESS OTHERWISE NOTED.

4) SECTIONS DRAWN-LOOKING FORWARD. AND ELEVATIONS DRAWN-LOOKING OUTBOARD. ALL VIEWS DRAWN - PORT SIDE SHOWN, STARBOARD SIDE SIMILAR & OPPOSITE HAND.

5) WHERE STRINGERS OR LONG'LS PASS THROUGH SLOTTED WEB FRAMES THERE IS TO BE A MATCHED PAIR OF INTERMITTENT WELDS ON EACH SIDE OF EACH INTER-SECTION. ALL UNBRACKETED STIFFENERS SHALL HAVE A MATCHED PAIR AT EACH END.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1			THIS PLAN IS A DUPLICATE OF PLAN NO. H4622-129-03-14 REV. 6' PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS:		
2	2/16/71	5	1. IN "5-D", DELETED INDICATION OF LADDER BETWEEN FRS. 92-93 & RELOCATED ACCESS HOLE.	P.K.	OWNER 3/24/71 USCG 4/16/71 ABS 5/10/71
		6	2. IN "6-D", DELETED DETAILS OF LADDER BETWEEN 12'-0" ABV. ℄ STRINGER & TANK TOP. ALT. TO SUIT DEPT 22 MEMO & SKETCH 2-2-71		
3	5/18/72	3 4	1. DELETED DET 3-A 2. REFERENCED TEMPORARY ACCESS CLOSING PTS. IN LONG'L BHD.	J.W.	ABS 7/10/72 USCG 6/28/72 OWNER 6/28/72
		1	3. ADDED REFERENCE #14		
4	1/26/73	5,4 3	1. IN "4-D", REINSTATED THE SEAM 2'-6" ABOVE THE INNERBOTTOM FOR HULL 4640, TO FACILITATE ERECTION. 2. AMENDED NOTE PERTAINING TO TEMP. ACCESS PL, TO SUIT OWNER'S REQUEST	A.K.	USCG 4/16/73 ABS 7/25/73

HULL	DESIGN	CHARGE
4640	OCEANIC	4639
4639	OCEANIC	4639

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" & AS NOTED DATE 1 OCTOBER 1970
DRAWN C/B CBP APPROVED
TRACED APPROVED
CHECKED [illegible] APPROVED [illegible]

PLAN NO. H4639-129-03-14 ALT. NO. 4²

LONG'L. BHD., TRANS'V. WEBS BELOW 2ND DECK & WING BHD. - FRS 79 - 94

UAO-39446-B

NO.	PLAN NO.	TITLE
15	H-4639-129-08-20	LONG'L BULK'D SC-1½" OREB 175-190
14	H-4639-129-99-9	LONG'L BHD ACCESS CLOSING PTS. FR. 64-227
13.	H4639-129-05-2	SHELL EXPANSION - FRS. 64-220.
12.	06-5	↓ ↓ ↓ SHT. #2
11.	06-4	CONTAINER STOWAGE #5 HOLD SHT. #1
10.	03-42	TRANS'V. BOX GIRDERS NO. 5 HOLD
9.	-24	↓ - ↓ ↓ ↓ -80-115
8.	-23	L. BHD ABV. 2ND DK, 2ND & UPPER DK RTG - 53-79
7.	-15	LONG'L BHD & TRANS'V WEBS BEL 2ND DK - 35-110
6.	-13	L. BHD. & TRANS'V. WEBS BEL 2ND DK. & W. BHD - 64-78
5.	-5	↓ GIRDERS - ↓ ↓
4.	-4	FLOORS -
3.	H4639-129-03-3	INNERBOTTOM RATING - FRS. 64-110
2.	STD-129-00-2.	RATE EDGE DETS. FOR STD. BUTT WELDS
1.	STD-129-00-1	STRUCTURAL DETAILS

REFERENCE PLANS

APPROVAL LETTERS

HULL					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-10-70				
A.B.S.	1-8-71				
U.S.C.G.	11-30-70				
LLOYD'S R.S.					
U.S.P.H.S.					

O.D. MARKS
3-9-71
6-5-72

DATE OF ISSUE

ALTERATION	1	1	2²	2²	3³	4²
ENGINEERING DISTRIBUTION	10/30/70	10/7/70	2/25/71	3/11/71	5/22/72	3/29/73
OWNERS & INSP	2		5		5	4
AMERICAN BUREAU	3		3		3	3
LLOYD'S R.S.						
U.S.M.A. & INSP	1		2		2	2
U.S NAVY						
U.S.C.G.	3		3		3	3
JOINER CONT'R.						
PEMERSACK	2					
OWNER'S INSP.	1	1	1	1		
AM. BU. INSP.		1	1		1	1
LLOYD'S INSP.						
U.S.M.A. INSP.	1					
U.S. NAVY INSP.						
U.S.C.G. INSP.		1	1		1	1
HULL DRAFT.-21		1	1	1	1	1
MACH. DRAFT.-22		1	1		1	1
ELEC. DRAFT.-23		1	1		1	1
OUTFIT. DRAFT.-26						
ESTIMATING						
C.P. SCHAUB		1	1		1	1
PRODUCTION (BCD)						
ORDER DEPT.						
JOINER CONT. YARD						
TOTAL ENG'R. DIST.	19	7	20	2	17	18
YARD DISTRIBUTION	11/5/70	2/22/71	3/15/71	5/30/72	3/30/73	
GPM J. JOYCE	3	3	3	3	3	
PIECE RATE-11	1	1	1	1	1	
TEST DEPARTMENT						
PLANNING	1	1	1	1	1	
GROUND ASSEMBLY	8	8	4	4	4	
35 DEPT	4	4	2	2	2	
NO. WAY						
NO. WAY						
NO. WAY						
NO. WAY						
STRUCT. SUPER.	2	2	2	2	2	
OPTICAL DETAIL-48	1	1	1	2	2	
WET DOCK						
PIPE SHOP-52						
OUTFIT. @ 1 PIER						
PIPE DRAFT.-82			2	2	2	
BOILER SHOP-58	3	-				
OUTSIDE MACH.-60	2	2	2	1	1	
ELECTRIC SHOP-70						
SHEET MET. SHOP-74	1	3	3	2	2	
COPPER SHOP-81						
PAINT SHOP-78		1	1	1	1	
WELDING	1	1	1	1	1	
Q-MAT'L	2	2	2	1	1	
MOLD LOFT-41	1	1	1	1	1	
BRACKET SHOP						
ORDER DEPT.	1			1	1	
TOTAL YARD DIST.	32	30	30	25	25	

4639, 40-ALT 4²

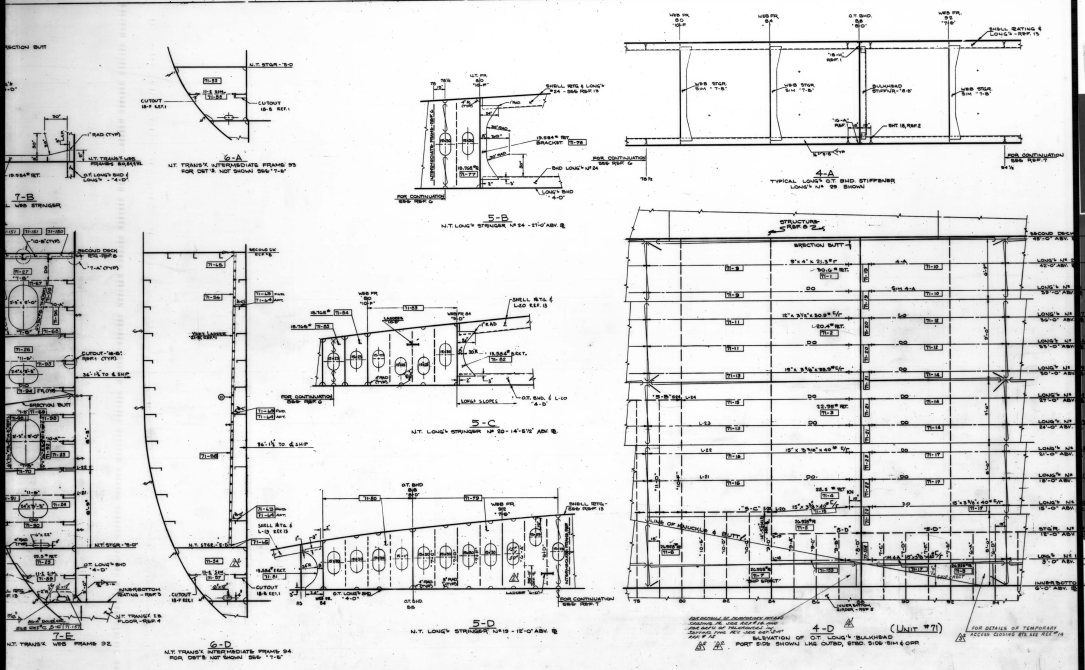
H-56 ___ SQ. FT.

3 2 1

1

H-4639-129-03-14
ALT. 4
H-56

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



REV	ITEM	QTY
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

2

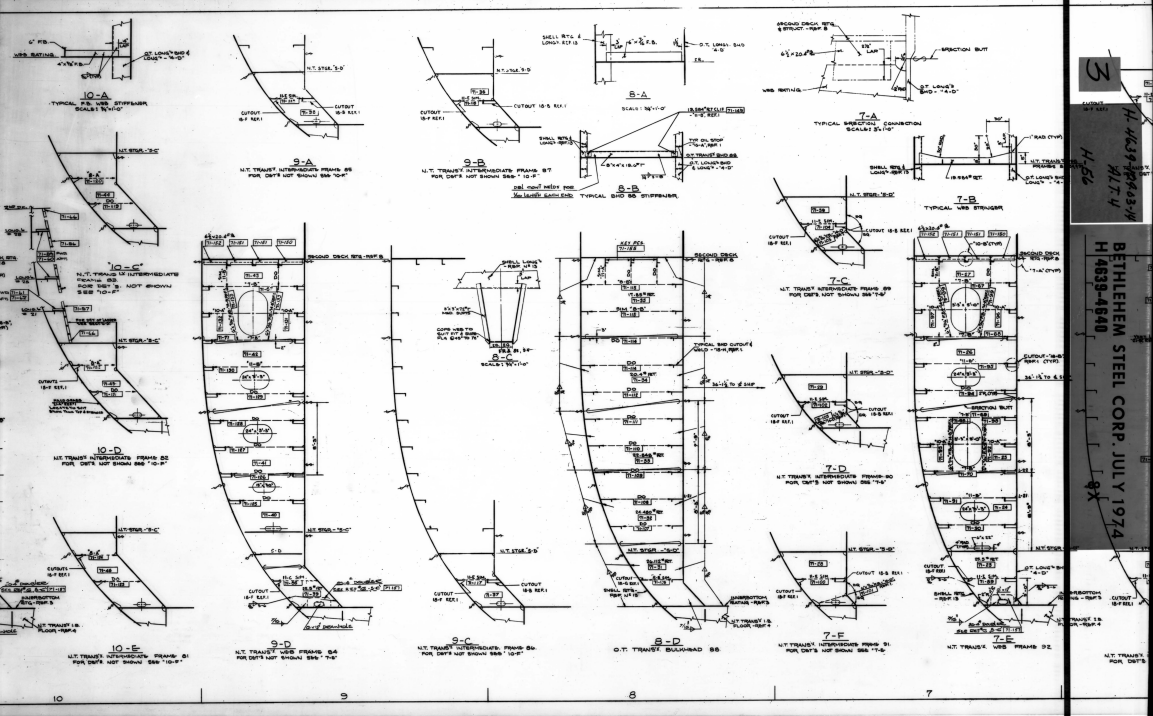
H-56

ALT. 4

BETHLEHEM STEEL CORP. JULY 1974

H 4639-4640

8X



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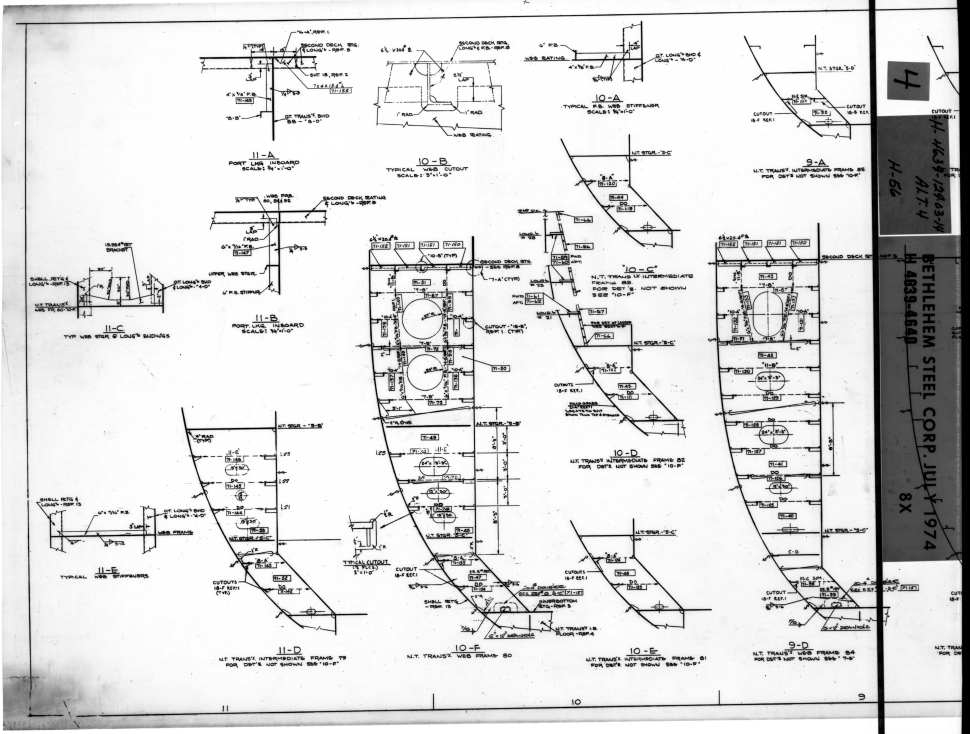
H-4639-4639-03-14
ALT. 4
H-56

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640



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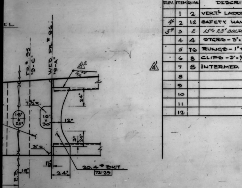
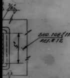
H-4639-129A63-14
ALT. 4
H-56

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



"3-A"
...ER # 19 12'-0" A.D.L



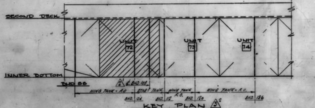
LONG'L BHD
"3-B"
3"=1'-0"

BILL OF MATERIAL

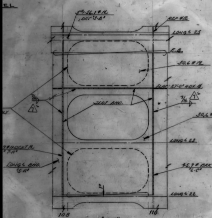
(QUANTITY FOR ONE SHIP)

REV.	ITEM	QUAN.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PATT. OR SYMBOL NO.	REMARKS	RI.-RL NO.	JOZ. NO.
	1	2	VERT.L LADDER X=AS NOTED	STEEL	ABS. OR EQUIV.	"21-B" REF. 1	SEE BELOW FOR MATERIAL		
4[6]	2	12	SAFETY HANDGRAB'S, X=6"	"	" " "	"21-A" REF. 1	1" SQ. BAR - LENGTH TO SUIT	72-8	
3[9]	3	2	15"x23" BOLTED PL. MANHOLE				REF# 13		
	4	4	STGRS - 3"x½" F.B. L=39'-0"	STEEL					
	5	76	RUNGS - 1" SQ. BAR L=1'-3"	"					
	6	8	CLIPS - 3"x½" F.B. L=4"	"					
	7	8	INTERMED. BRACES L=24"	"					
	8								
	9								
	10								
	11								
	12								

△4[1]



KEY PLAN △3[2]



"3-C"
¾"=1'-0"

△5[2] ~~RESERVATION~~
~~1 HOLD UP CUTOUT IN LONG'L~~
~~BHD. PENDING FINAL INFO.~~
~~FROM OWNER~~

GENERAL NOTES:

1- ALL WELDS & PLATE EDGE PREPARATION FOR SEAMS & BUTTS TO BE IN ACCORDANCE WITH A.B.S. AND REF.# 2

2- WEB FRAMES ARE DRAWN PORT SIDE LOOKING FORWARD. STB'D SIDE SIMILAR TO OPPOSITE HAND.

3- WELDING TO BE AS FOLLOWS:

a) WHERE LONG.LS PASS THROUGH SLOTTED WEB FRAMES THERE IS TO BE A MATCHED PAIR OF INTERMITTENT WELDS ON EACH SIDE OF EACH INTERSECTION, ALL UNBRACKETED STIFFENERS SHALL HAVE A MATCHED PAIR AT EACH END.

b) TRANSVERSE WEB FRAME BOUNDARY CONNECTION TO BE 5/16" ▷ 3-8 (DOUBLE INTERMITTENT) OR ¼" ▷ (DOUBLE CONTINUOUS) ALL AROUND. (YARD OPTION). EXCEPT AS FOLLOWS: △5[1]
TO INNER BOTTOM 7/16 ▷ (DOUBLE CONTINUOUS). EXCEPT AS SHOWN ON DRAWING.

c) ALL OTHER WELDING TO BE 5/16" ▷ 3-8 (DOUBLE INTERMITTENT) OR ¼" ▷ (DOUBLE CONTINUOUS). (YARD OPTION). △10[4]

△8[1] 4- THE HEIGHT OF THE OVERFLOWS IN THE STABILIZER TANK IS 52'-6" ABV. ℄. △1

UAO-39446-C

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
5	7/8/71	2 2 6,7 7 5 8 11 6	1) REV. GEN. NOTE "3(b) 2) RELEASED RESERVATION NO. 1 3) ADDED 3" R. DRAIN HOLES ABV. & BLW. 27'-0" FLAT DET. "6-C" & ELEV. "7-A". 4) IN ELEV. "7-A" INCREASED OPNG. SIZE, ADDED (2) 24" DIA. HOLES, MADE BHD. BLW. 12'-0" FLAT W.T., REV. PL. BUTT & PL. SIZE, THK. & WELD BLW. 12'-0" FLAT. 5) REV. WELD. DET. "5-B". 6) REV. WELD BLW. 12'-0" FLAT DET. "8-A" 7) REV. LOC. OF LADDER BLW. 27'-0" FLAT IN DET. "11-C" TO SUIT "11-B". 8) ADDED WELD TO ELEV. "6-B" ABV. ITEMS TO SUIT OWNERS APPROVAL	EME	N.T.T. 7/12/71 J
	7/15/71	2	9) IN B.M. ADDED ITEM #3	P.K.	
6	7/30/71	1 5 11	1. REVISED ALTERATION 4[3] TO READ FR. 106 INSTEAD OF 108. 2. IN DET. 5-A ADDED INDICATION OF WEB FR. AT FR. 106. 3. REVISED DET. 11-A.	J.W.	R
7	8/13/71	3 3 6-11 7 7	1) WELD REV. TO 3/8 IN "3-A" 2) WELD REV. TO 7/16 IN "3-C" 3) BRKT REV. IN "6-A" & "11-E" ~ 12'-0" & 27'-0" FLATS. 4) DET. "7-D" ~ BRKTS @ SHELL LONG.L OMITTED. KEY PIECE ADDED TO LONG.L. BRKT @ BHD LONG.L INCR'D 20" 5) FILLER PL.S ADDED TO LONG.L OPENINGS IN WEB FR 108 ~ DET "7-A" ABV. CHANGES IN ACCORDANCE WITH ABS.	CBP	ABS 7/28/71 N.T.T. 8/18/71 J
		7	6. IN "7-A" REVISED THE OPENING IN THE CENTER BAY BETWEEN LONG'L 20-22	P.K.	
8	10/21/71	2 3	1 IN "GENERAL NOTES", ADDED NOTE #4 PERTAINING TO OVERFLOW HEIGHT. 2 IN "3-A" CHANGED WELDING FROM ¼" TO 5/16". ALT. TO SUIT A.B.S. REQUEST DATED 9-23-71	P.K.	J USCG 11-30-71 ABS 11/3/72
9	11/1/71	5,6,7 4	1 IN "5-A", "6-A" & "7-A", ADDED DET'L. OF SUMP @ 27'-0" FLAT BETWEEN FR'S. 107-108; ADDED DET'S "4-A", "4-B", "4-C". ALT TO SUIT DEPT. 22 MEMO DATED 9-29-71	P.K.	N.T.T. 11/10/71 ABS 2/1/72 USCG
10	5/18/72	6,7 6 5 1 8	1. IN "6-C" & "7-A" REVISED 3" DRAIN HOLES ABOVE & BELOW 27'-0" FLAT; ADDED "6-F". 2. IN "6-A" F.& A. STIFFRS FITTED FRS. 108-110. DET. "6-G" ADDED. (Y.I.S. # 79) 3. IN DET. 5-A ADDED INDICATION OF TEMPORARY ACCESS CLOSING PLTS. IN LONG'L BHD. AND MADE SEAM 2'-6" ABOVE INNERBOTTOMS FOR 4639 ONLY 4. ADDED REF. #14 5. "CUT-OUTS" ADDED IN BHD FR. 104. SEE DET. "8-A" & NEW DET. "8-C" (Y.I.S. #78)	P.K. R.J.L. J.W. RJL	ABS 7/14/72 J USCG 6/30/72 OWNER
11	6/5/72	7	1 IN "7-D" DELETED KEY PIECE @ THE SHELL	P.K.	
	8/16/72	6,3	2 IN "6-C", RELOCATED THE FACE PL. TO THE FWD. SIDE (YIS 88)	P.K.	
12	4/26/73	4,5	1. IN "5-A", REINSTATED THE SEAM 2'-6" ABOVE THE INNERBOTTOM, FOR HULL 4640, TO FACILITATE ERECTION. 2. AMENDED NOTE PERTAINING TO TEMP. ACCESS PL., TO SUIT OWNER'S REQUEST	P.K.	R USCG 5-4-73 ABS 7-23-73

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	8/24/70		THIS PLAN IS A DUPLICATE OF PLAN NO. H4622-129-03-15 REV. 52 PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS: 1) ADDED BHD 98 AS REFERENCE. 2) ADDED WEB FR. 98 AS BACK-UP FOR NEW BHD 98 DUE TO RELOCATIONS OF HOLDS.		ABS 2-0-71 USCG 11-30-70
2	11/18/70		1) DELETED BHD. 98 & WEB FR. 98 ADDED BRKS. FOR FR. 98 ADDED BHD. 108 TO KEY ELEV. DELETED "MOLASSES" FROM KEY.	CBP	CBP
	12/15/70	7	2) IN DETS. "7-A", "8-A", "8-B" & "9-A" F.B.'s FITTED BELOW 2ND DECK & WEB PLATE LAPPED. DET. "6-A" DELETED. 3) IN DET. "7-B" DELETED COLLAR & REVISED LONGL. CUT-OUT. 4) IN DETS. "10-A" & "10-C" DELETED BUTT & RAD. CUT-OUT. 5) IN DETS. "7-A", "8-A", "8-B" & "9-A" REVERSED LAP AT SECOND DECK		LWB. Owner 1-9-71 ABS 2-11-71 USCG 1-8-71
3	3/1/71	2 & 8	1) KEY PLAN ALTERED TO SUIT NEW CONFIGURATION OF O.T. WING BHDS. 2) WEB FRAME AT FR. # 104 HAS BEEN CHANGED TO AN O.T. BULKHEAD AND DETAILS ALTERED ACCORDINGLY. 3) NEW 30.6# PLT. INSERTED INTO LONGL. BHD. AS SHOWN. ALL TO SUIT DEP. #022.		J OWNER 3-30-71 L.W.B. ABS 5/18/71 R
4	4/21/71	6	1) IN "6-B": REV. LADDER BASE DIM. FROM LONG'L #18 FROM 15" TO 24" PER 22 DEPT. REQUEST DATED 4/5/71. REV. ITEM 7 IN B/M FROM 14" TO 24" LONG TO SUIT.	F.E.W.	J R
	6/14/71	4 6 7 3,2	2. IN "5-A" ADDED 5" x 56.1# COMPENSATION BAR @ LONG'L 25, 26, 27, 28 AND ADDED INDICATION OF 27'-0 & 12'-0" FLAT AND ADDED CUTOUTS.; AND RESERVED CUTOUT IN LONG'L BHD. PENDING FINAL INFO FROM OWNER. 3. IN "6-B" DELETED LADDER & PLATED IN FR 106 4. IN "7-A" REVISED CUTOUTS IN WEB FR. & ADDED 45.9# INSERT PL.; ALSO ADDED INDICATION OF 27'-0" & 12'-0" FLATS. 5. ADDED DETAILS "3-B", "3-C", "5-C", "6-C", "6-A", "6-D", "6-E", "7-C", "7-D" "11-E", "11-D" 6. IN BM CHANGED QUAN OF ITEM 2 7. IN "8-A", "8-B", "9-A" ADDED ERECTION BUTTS. ITEMS 2-6 TO SUIT INSTALLATION OF STABILIZING SYSTEM.	P.K. G.G.S.	J 6-29-71

HULL	DESIGN	CHARGE
4640	OCEANIC	4639
4639	OCEANIC	4639

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8"=1'-0" ¾"=1'-0" DATE 1 OCTOBER 1970
DRAWN C/B CBP APPROVED
TRACED APPROVED
CHECKED [illegible] APPROVED R.A. Jackson

PLAN NO. H4639-129-03-15 ALT. NO. 12[2]

LONGITUDINAL BULKHEAD
UNIT 72
36'-1½" OFF ℄
FRAMES 95 TO 110 INCL.

NO.	PLAN NO.	TITLE
14	H-4639-129-99-9	LONG'L BHD. ACCESS CLOSING PLTS. FRS. 64-227
13	STD. 144-00-5	15"x23" MANHOLE - BOLTED
12	H-4639-129-01-2	TRANS.L W.T. BHD. 108
11	H4639-129-06-7	CONTAINER STOWAGE HOLD NO 4 SHT 2
10	H4639-129-06-6	CONTAINER STOWAGE HOLD NO 4 SHT 1
9	H4639-129-06-5	CONTAINER STOWAGE HOLD NO 5 SHT 2
8	H4639-129-06-4	CONTAINER STOWAGE HOLD NO 5 SHT 1
7	H4639-129-01-2	W.T. TRANSV. BHD FR 98
6	H4639-129-05-2	SHELL EXPANSION
5	H4639-129-03-24	STRUCTURE BET. 2ND DK & UP. DK. FRS. 80-115
4	H4639-129-03-16	FR.S 111 TO 126 UNIT - 73
3	H4639-129-03-14	FR.S 79 TO 94 UNIT - 71
2	STD-129-00-2	PLATE EDGE DETAILS FOR STD. WELD
1	STD-129-00-1	STRUCTURAL DETAILS

REFERENCE PLANS

APPROVAL LETTERS

APPROVED BY	DATE	DATE	DATE	DATE	DATE
HULL					
OWNERS	11-9-70				
A.B.S.	2-10-71	8-9-71			
U.S.C.G.	11-30-70	11-9-72			
LLOYD'S R.S.					
U.S.P.H.S.					

O.D. MARKS

2-8-71	12-8-71
4-13-71	6-5-72
7-30-71	
10-13-71	

DATE OF ISSUE

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	ALTERATION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	ENGINEERING DISTRIBUTION	10/2/0	10/7/0	12/17/0	3/29/71	3/29/71	4/27/71	6/17/71	6/19/71	7/19/71	8/2/71	8/30/71	9/30/71	10/26/71	11/12/71	5/22/72	9/7/72	3/30/73
MAIL	OWNERS & INSP.	3		3	2	5		5		3		3			3	5	3	4
MAIL	AMERICAN BUREAU	3		3		3		3		3		3		3	3	3	3	3
MAIL	LLOYD'S R.S.																	
MAIL	U.S.M.A. & INSP.							2		2		2			2	2	2	2
MAIL	U.S. NAVY																	
MAIL	U.S.C.G.	3		3		3		3		3		3		3	3	3	3	3
MAIL	JOINER CONT'R.																	
MAIL	PEPERSACK	2						2										
INSPECTION	OWNER'S INSP.						1		1		1		1		1			
INSPECTION	AM. BU. INSP.						1		1		1		1		1	1	1	1
INSPECTION	LLOYD'S INSP.																	
INSPECTION	U.S.M.A. INSP.																	
INSPECTION	U.S. NAVY INSP.																	
INSPECTION	U.S.C.G. INSP.						1		1		1		1		1	1	1	1
OFFICE	HULL DRAFT. - 21		1P			1P	1		1		1		1		1	1	1	1
OFFICE	MACH. DRAFT. - 22		1P				1		1		1		1		1	1	1	1
OFFICE	ELEC. DRAFT. - 23		1P				1		1		1		1		1	1	1	1
OFFICE	OUTFIT. DRAFT. - 25																	
OFFICE	ESTIMATING																	
OFFICE	C D SCHAUB						1		1		1		1		1	1	1	1
MISC.	PRODUCTION (BCD)																	
MISC.	ORDER DEPT.																	
MISC.	JOINER CONT. YARD																	
	TOTAL ENG'R. DIST.	11	3	9	2	12	7	15	7	11	7	11	7	6	18	19	17	18

		1	2	3	4	5	6	7	8	9	10
	YARD DISTRIBUTION		10/7/0	5/3/71	6/22/71	8/11/71	9/7/71	11/17/71	5/3/72	9/25/72	4/2/73
YARD	SPM										
YARD	A. J. DALBY						3	3	3	3	3
YARD	PIECE RATE - 11		1P	1	1	1	1	1	1	1	1
YARD	TEST DEPARTMENT										
YARD	R. G. ROBERTS		1P	3	3	3	-	-			
YARD	PLANNING		1P	1	1	1	1	1	1	1	1
STRUCTURAL	GROUND ASSEMBLY			8	8	8	8	8	4	4	4
STRUCTURAL	35 DEPT			4	4	4	4	4	2	2	2
STRUCTURAL	E. TURNS										1
STRUCTURAL	J. TARPLEY										1
STRUCTURAL	NO. WAY										
STRUCTURAL	NO. WAY								1		
STRUCTURAL	NO. WAY										
STRUCTURAL	NO. WAY										
STRUCTURAL	STRUCT. SUPER.			2	2	2	2	2	2	2	2
STRUCTURAL	OPTICAL DETAIL - 46		2P	1	2	2	2	2	2	2	2
STRUCTURAL	WET DOCK										
MACH'Y & OUTFIT.	PIPE SHOP - 52										
MACH'Y & OUTFIT.	OUTFIT. #1 PIER										
MACH'Y & OUTFIT.	PIPE DRAFT. - 52			1	2	2	2	2	2	2	2
MACH'Y & OUTFIT.	BOILER SHOP - 58										
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60			1	1	1	2	2	1	1	1
MACH'Y & OUTFIT.	Q-MAT'L			2	2	2	2	2	1	1	1
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70										
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74			3	3	3	3	3	2	2	2
MACH'Y & OUTFIT.	COPPER SHOP - 81										
MACH'Y & OUTFIT.	PAINT SHOP - 75			1	1	1	1	1	1	1	1
MACH'Y & OUTFIT.	WELDING			1	1	1	1	1	1	1	1
OTHER	MOLD LOFT - 41			1	1	1	1	1	1	1	1
OTHER	BRACKET SHOP										
OTHER	ORDER DEPT		1	1	1	1	1	1	1	1	1
	TOTAL YARD DIST.	/	6	11	33	33	34	34	35	35	37

4639,40 - ALT. 10[1]
4639,40 - ALT. 11[1]
4639,40 - ALT. 12[3]

H-57

28 SQ.FT.

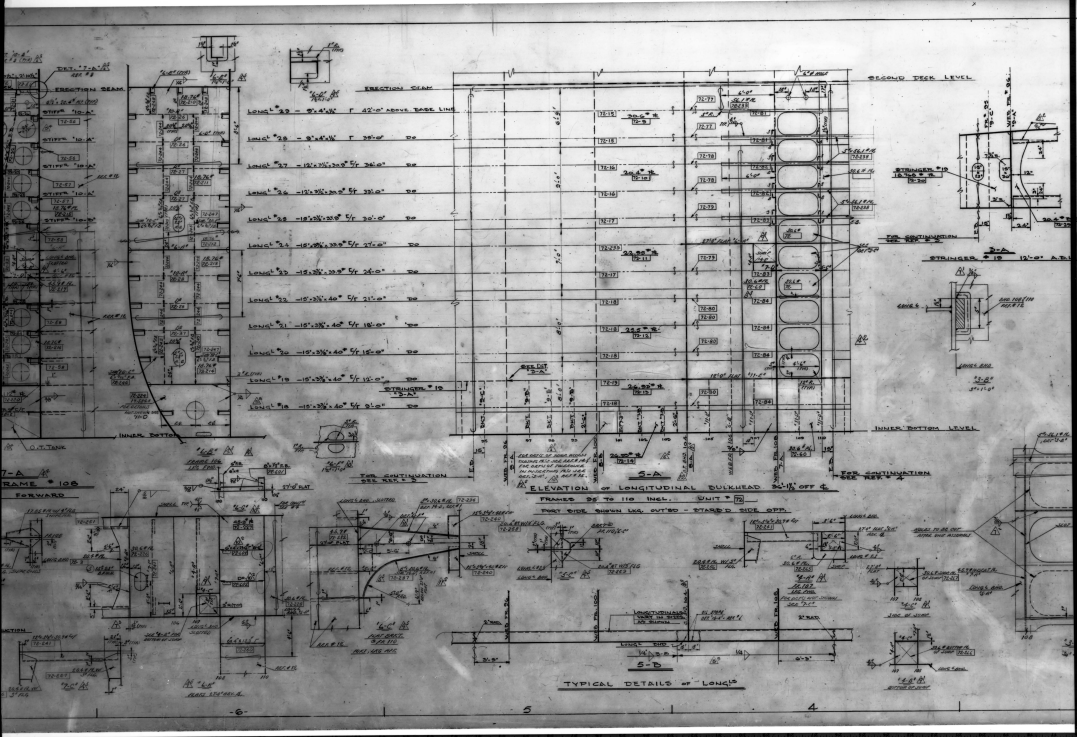
#00.85

3 2 1

1

H-4639-129-03-15
ALT. 12
H-57

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



REV.	ITEM	DESCRIPTION
1	2	
2	3	
3	4	
4	5	
5	6	
6	7	

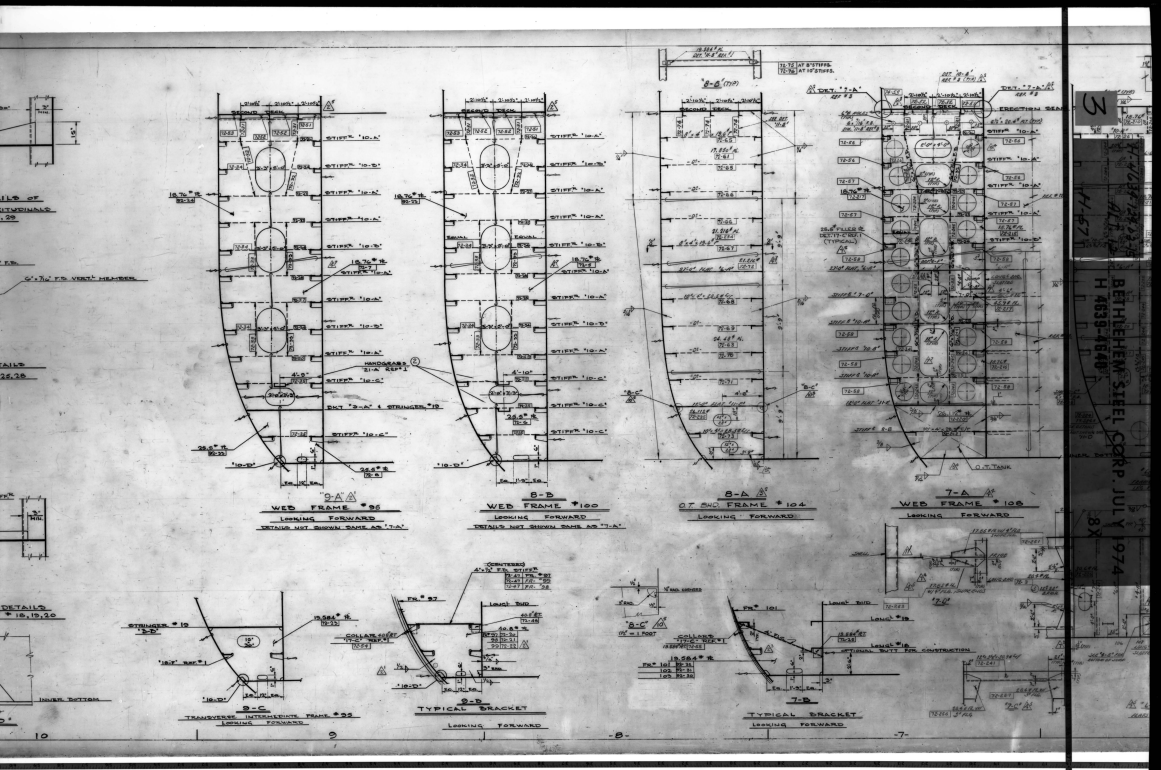
2

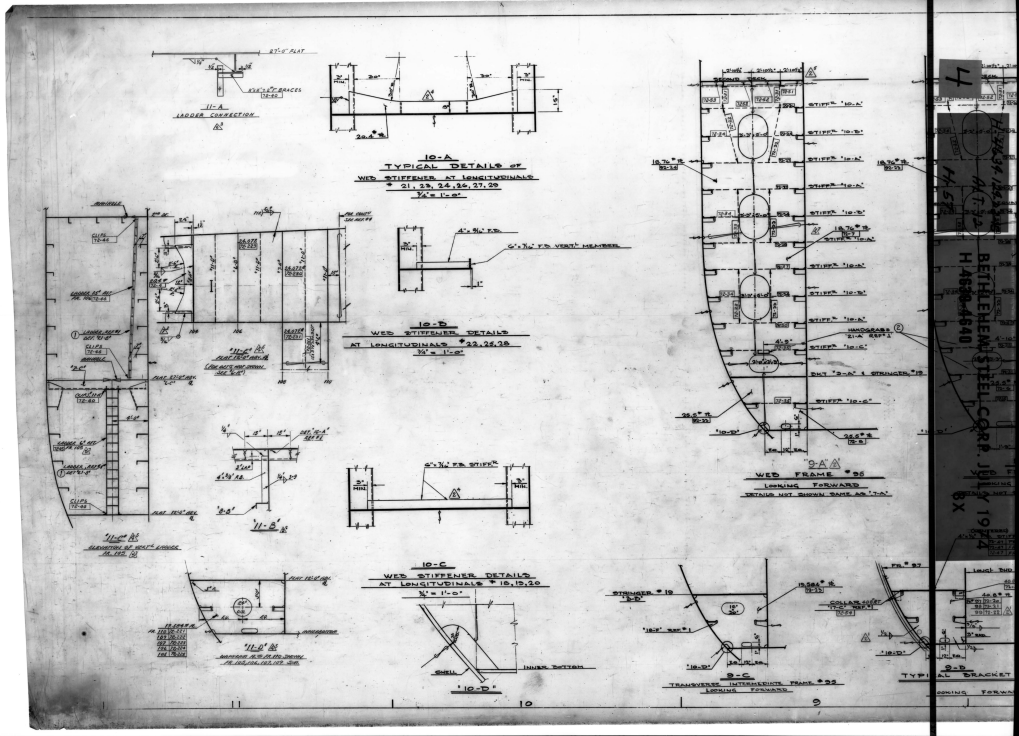
H-57

BETHLEHEM STEEL CORP. JULY 1974

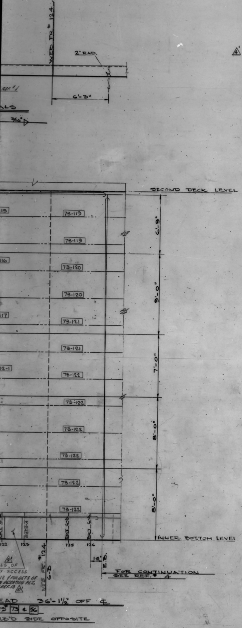
H 4639-4640

8X


9-A
WEB FRAME #96
LOOKING FORWARD
DETAILS NOT SHOWN SAME AS "7-A"
8-D
WEB FRAME #100
LOOKING FORWARD
DETAILS NOT SHOWN SAME AS "7-A"
8-A
OT SWD FRAME #104
LOOKING FORWARD
7-A
WEB FRAME #108
LOOKING FORWARD
9-C
TRANSVERSE INTERCOSTAL FRAME #92
LOOKING FORWARD
9-B
TYPICAL BRACKET
LOOKING FORWARD
7-B
TYPICAL BRACKET
LOOKING FORWARD
BETHLEHEM STEEL CORP. JULY 1974
H 4639-1848
10
9
-8-
-7-



BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

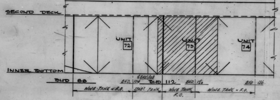


BILL OF MATERIAL

REV.	ITEM	QUAN.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PATT. OR SYMBOL NO.	REMARKS	RLS. NO.	JOB NO.
	1	2	VERT.L LADDER - X = AS NOTED	STEEL	ABS. OR EQUIV.	"21-D" REF #1	SEE BELOW FOR MATERIAL		
	2	12	SAFETY HANDGRABS X = 6"	"	" " "	"21-A" REF #1	1" SQ. BAR LENGTH TO SUIT	73.8	
	3								
	4	4	STGRS - 3" x ½" F.B. L = 39'-0"	STEEL					
	5	76	RUNGS - 1" SQ. BAR L = 1'-3"	"					
	6	4	CLIPS - 3" x ½" F.B. L = 4"	"					
4	7	8	INTERMED. BRACES L = 24"	"					
	8								
	9								
	10								
	11								
	12								

USCG 5-4-73
ABS 7-24-73

No	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
5	7/6/71	4	1) ADDED WELD SYMBOL ELEV. "4-A" TO SUIT OWNERS APPROVAL. 2) ADDED ACCESS OPNGS IN ELEV. "7-B"	E.M.E.	NJT 7/12/71
6	8/13/71	5 & 9	1) IN "5-C" AND "9-B" REVISED BRKTS AT 12'-0" AND 27'-0" FLATS, TO COMPLY WITH A.B.S. REQUEST.	C.B.P.	NJT 8/18/71
7	9/10/71	6	1. IN DET. 6-A ADDED COLLAR (ABS)	J.W.	NJT 11-30-71
8	10/2/71	2	1. IN "GENERAL NOTES", ADDED NOTE #4 PERTAINING TO OVERFLOW HEIGHT, TO SUIT A.B.S. REQUEST, DATED 9-23-71	P.K.	USCG, ABS
9		4	1. IN DET. 4-A ADDED INDICATION OF TEMPORARY ACCESS CLOSING PTS. IN LONG'L BHD. AND MADE SEAM 2'-6" ABOVE INNERBOTTOMS FOR 4639 ONLY	J.W.	ABS
		1	2. ADDED REF. #12		
		7	3. CUT-OUTS SHOWN IN O.T. BHD 112, SEE DET. "7-B" & NEW DET. "7-D" (Y.I.S. #78)	R.J.C.	USCG
10	3/30/73	4	1- AMENDED NOTE PERTAINING TO TEMP. ACCESS PL. DET. "4-B". 2- ADDED REF. 13. ALT ADDED TO FACILITATE ERECTION.	HAS	



KEY PLAN 3

GENERAL NOTES:

1- ALL WELDS & PLATE EDGE PREPARATION FOR SEAMS & BUTTS TO BE IN ACCORDANCE WITH A.B.S. AND REF. # 2

2- WEB FRAMES ARE DRAWN PORT SIDE LOOKING FORWARD. STB'D SIDE SIMILAR TO OPPOSITE HAND.

3- WELDING TO BE AS FOLLOWS:

a) TRANSVERSE WEB FRAME BOUNDARY CONNECTION TO BE 1/4" ALL AROUND EXCEPT AS FOLLOWS: TO INNER BOTTOM : 7/16"

b) BULKHEAD BOUNDARY CONNECTION TO BE 5/16" EXCEPT AT INNER BOTTOM WHICH IS 7/16"

c) ALL OTHER WELDING TO BE 1/4" EXCEPT WHERE NOTED.

8 4- THE HEIGHT OF THE OVERFLOWS IN THE STABILIZER TANK IS 52'-6" ABV. ℄.

UAO-39446-D

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1			THIS PLAN IS A DUPLICATE OF PLAN NO. H4622-129-03-16 REV. 6 PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS:		
2	11/18/70		1) DELETED WORD "MOLASSES" FROM KEY ELEV. & "4-A".	CBP	USCG 1/8/71
	12/14/70		2) IN DET. "6-B" F.B. FITTED BELOW 2ND DK. & WEB PLATE LAPPED. REF. DWG. #7 ADDED. DET. "5-A" DELETED.		OWNER 1/19/71
	12/15/70	6	3) IN DET. "6-A" DELETED COLLAR PL. @ SHELL LONGS & REVISED CUTOUT.	P.K.	
		8	4) IN DETS. 8-A & 8-C - DELETED BUTT & RAD. CUTOUT	CBP	
	4/28/71	6	5) IN DETAIL 6-B-FR 116, 120 & 124 REVERSED LAP AT SECOND DK	CBP	
		3,4	6) HORIZONTAL SEAM 2'-6" ABOVE INNER BOTTOM, ELIMINATED.	R.J.C.	
3	3/3/71	2, 8, 10	1) KEY PLAN ALTERED TO SUIT NEW CONFIGURATION OF O.T. WING BHDS. 2) WEB FRAME AT FR. #120 HAS BEEN CHANGED TO AN O.T. BHD. - ALL DETAILS ALTERED ACCORDINGLY. 3) STIFFS. ON O.T. BHD. #112 HAVE BEEN ALTERED FROM THE VERTICAL TO THE HORIZONTAL 4) NEW 30.6# PLT. INSERTED INTO LONGL. BHD. AS SHOWN ALL TO SUIT DEPARTURE #022	LWB.	OWNER 3/30/71, ABS 5/18/71
4	5/14/71	3,10	1) IN "10-A": REV. BASE DIM. OF LADDER FROM 14" TO 24" OFF LONGL #18 PER DEPT #22 REQUEST DATED 4/5/71. REV. ITEM #7 IN B/M FROM 14" TO 24" LONG TO SUIT.		
	4/16/71	5	2. IN "4-B" ADDED 5" x 56.1# COMPENSATION BARS AND 56.1# INSERT PL. BETWEEN FR. 103-110; ALSO ADDED INDICATION OF 12'-0" & 27'-0" FLATS AND DIAPHRAGM PL. @ FR. 111.	P.K.	
		7	3. IN "7-B" ADDED INDICATION 12'-0" & 27'-0" FLAT; ALSO ADDED ERECTION BUTT BETWEEN LONG'S 24-25.		
		5,8,9	4. ADDED DETAILS "5-C", "8-0", "9-A", "9-B".		OWNER 6/23/71
		6,10	5. IN "6-B", "10-C" ADDED ERECTION BUTT BETWEEN LONG'S 24-25 ALT. ITEMS 2-4 TO SUIT INSTALLATION OF STABILIZING SYSTEM		

HULL	DESIGN	CHARGE
4640	OCEANIC	4639
4639	OCEANIC	4639

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 1 OCTOBER 1970
DRAWN C/B CBP APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639-129-03-16 ALT. NO. 10

LONGITUDINAL BULKHEAD
UNIT 73
36'-1½" OFF ℄
FRAMES 111 TO 126 INCL.

NO.	PLAN NO.	TITLE
13	H-4639-129-03-20	LONG'L BHD-UNIT 77 36'-1½ OFF ℄ FRS. 175-190 INCL.
12	H-4639-129-99-9	LONG'L BHD ACCESS CLOSING PTS. FRS. 64-227
11	H-4639-129-01-2	TRANS'L W.T. BHD. 108
10	H4639-129-06-7	CONTAINER STOWAGE HOLD NO. 4 SHT 2
9	H4639-129-06-6	CONTAINER STOWAGE HOLD NO 4 SHT 1
8	H4639-129-03-25	LONG'L BHD., T.V. WEBS, ABV. 2ND DK & 2ND DK PLTG
7	H4639-129-03-14	FRS. 79 TO 94 UNIT - 71
6	H4639-129-05-2	SHELL EXPANSION
5	H4639-129-03-24	SECOND DECK PLATING
4	H4639-129-03-17	FR'S 127 TO 142 UNIT - 74
3	H4639-129-03-15	FR'S 95 TO 110 UNIT - 72
2	STD-129-00-2	PLATE EDGE DETAILS FOR STD. WELD
1	STD-129-00-1	STRUCTURAL DETAILS

REFERENCE PLANS

APPROVAL LETTERS					
HULL					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-10-70				
A.B.S.	1-8-71	8-9-71			
U.S.C.G.	11-30-70				
LLOYD'S R.S.					
U.S.P.H.S.					

O.D. MARKS	
12-21-70	9-10-71
5-17-71	10-13-71
7-2-71	6-5-72

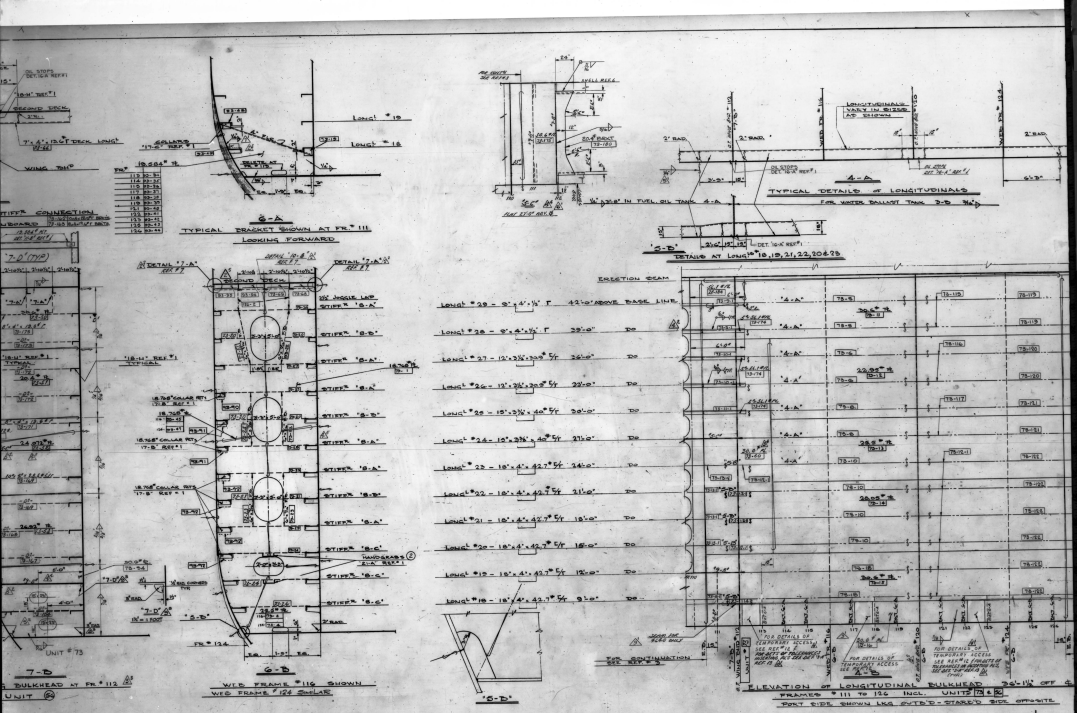
DATE OF ISSUE	
ALTERATION	[illegible]
ENGINEERING DISTRIBUTION	[illegible]
OWNERS & INSP.	[illegible]
AMERICAN BUREAU	[illegible]
LLOYD'S R.S.	[illegible]
U.S.M.A. & INSP.	[illegible]
U.S. NAVY	[illegible]
U.S.C.G.	[illegible]
JOINER CONT'R.	[illegible]
PEPERSACK	[illegible]
OWNER'S INSP.	[illegible]
AM. BU. INSP.	[illegible]
LLOYD'S INSP.	[illegible]
U.S.M.A. INSP.	[illegible]
U.S. NAVY INSP.	[illegible]
U.S.C.G. INSP.	[illegible]
HULL DRAFT. - 21	[illegible]
MACH. DRAFT. - 22	[illegible]
ELEC. DRAFT. - 23	[illegible]
OUTFIT. DRAFT. - 25	[illegible]
ESTIMATING	[illegible]
E.O. SCHAUB	[illegible]
PRODUCTION (BCD)	[illegible]
ORDER DEPT.	[illegible]
JOINER CONT. YARD	[illegible]
TOTAL ENG'R. DIST.	[illegible]
YARD DISTRIBUTION	[illegible]
CPM	[illegible]
A. J. TALBY	[illegible]
PIECE RATE - 11	[illegible]
TEST DEPARTMENT	[illegible]
R. B. ROBERTS	[illegible]
PLANNING	[illegible]
GROUND ASSEMBLY	[illegible]
35 DEPT.	[illegible]
E. TURNER	[illegible]
J. TARPLEY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
NO. WAY	[illegible]
STRUCT. SUPER.	[illegible]
OPTICAL DETAIL-40	[illegible]
WET DOCK	[illegible]
PIPE SHOP - 52	[illegible]
OUTFIT. #1 PIER	[illegible]
PIPE DRAFT. - 52	[illegible]
BOILER SHOP - 58	[illegible]
OUTSIDE MACH. - 60	[illegible]
ELECTRIC SHOP - 70	[illegible]
SHEET MET. SHOP - 74	[illegible]
COPPER SHOP - 51	[illegible]
PAINT SHOP - 75	[illegible]
WELDING	[illegible]
9-MACH. SHOP	[illegible]
MOLD LOFT - 41	[illegible]
BRACKET SHOP	[illegible]
ORDER DEPT.	[illegible]
TOTAL YARD DIST.	[illegible]

4639,40 - ALT 9
4639,40 - ALT 10

H-58 SQ. FT.

3 -2- 1

F 1
H-4639-129-03-16 ALT. 10
H-58
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



H-4639-124-03/16
ALT. 10
H-58

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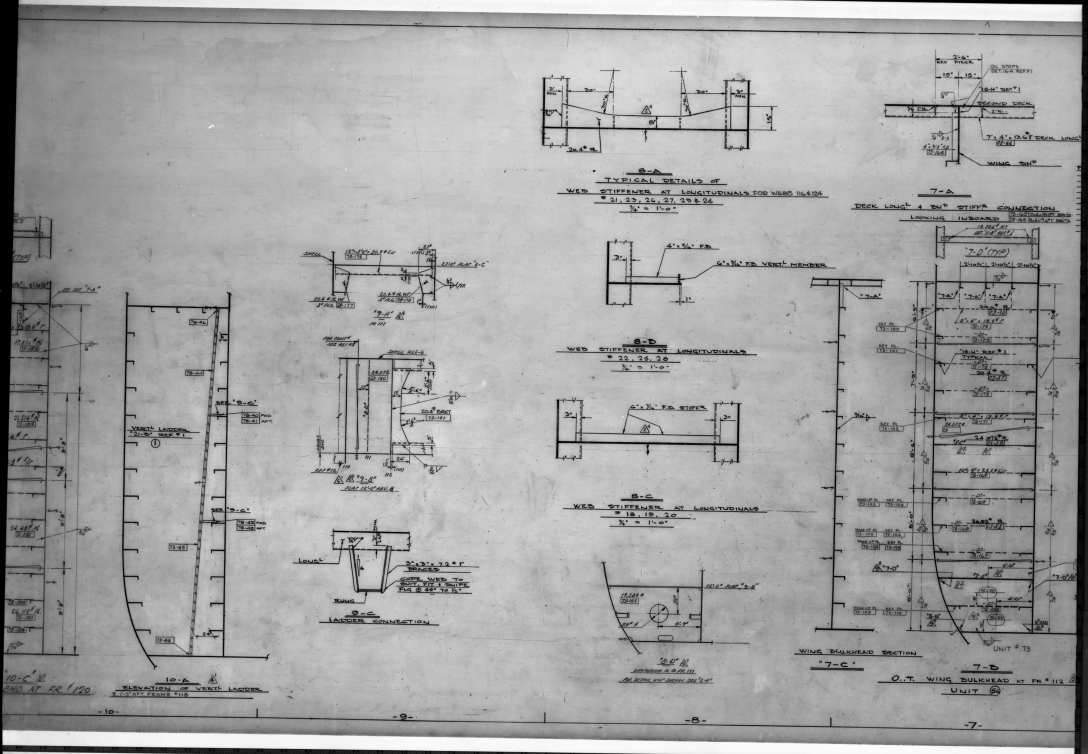
H 4639-4640
8X

F 2



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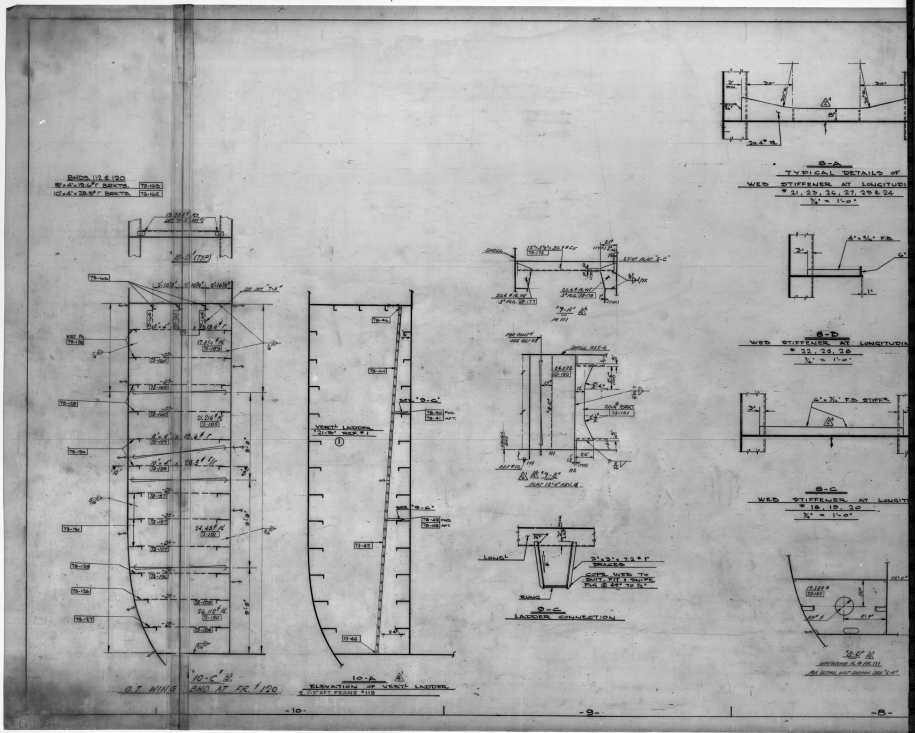
H-4639-129.03/6
ALT. 10
H-58

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



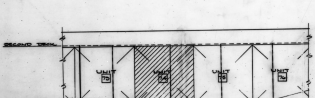
F 4

H-4639-129-03/16
ALT. 10
H-58

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

BILL OF MATERIAL

NO.	ITEM	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PART OR DRAWING NO.	REMARKS	MARK NO.	JOB NO.
1	2	VERT. LADDER, 2 RUNG NOTED	STEEL	SEE ON MAT'L LIST		SEE BELOW FOR MATERIAL		
2	18	SAFETY HANDRAILS X-6'	"	" " "		2-4" RISE	SEE SAE LENGTH TO SUIT	MV
3								
4	4	STUDS - 5'-1" FR. L = 66'-0"	STEEL					
5	78	BOLTS - 1" DIAM. L=2'-3"	"					
6	8	CLIPS - 3'-1" FR. L = 4'-1"	"					
7	8	INTERMED. BRACES L=2'-0"	"					
8								
9								
10								
11								
12								



KEY PLAN

GENERAL NOTES:

1. ALL WELDS & PLATE EDGE PREPARATION FOR SEAMS & BUTTS TO BE IN ACCORDANCE WITH A.B.S. AND REF.
2. WEB FRAMES ARE DRAWN FOR SIDE LOOKING FORWARD, STB'D SIDE. SIMILAR TO OPPOSITE HAND.
3. WELDING TO BE AS FOLLOWS:
4. TRANSVERSE WEB FRAME BOUNDRY CONNECTIONS TO BE AS FOLLOWS: ALL AROUND EXCEPT TO INNER BOTTOM : 5/16 ⊢
5. LONGIT'L & TRANSV. BHD BOUNDARY CONNECTION TO BE AS SHOWN ON PLAN.
6. ALL OTHER WELDING TO BE 1/4 ⊢ EXCEPT WHERE NOTED.

NO.	PLAN NO.	TITLE
		REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	12-12-73		THIS PLAN IS A REPLACEMENT OF PLAN H4639-09-03-03 DATED 10-19-73 WHICH IS SUPERSEDED BECAUSE OF CHANGES IN SCANTLINGS AND TO BRING PLAN INTO COMPLIANCE WITH ABS TO CONSTRUCTION STRUCTURAL HISTORY AS FOLLOWS:		
2	2-14-74	7	DELETED WORD "MOLDED" FROM KEY ELEVATION. "A IN DET." & "B & FITTED BELOW SHR DK. & MBD & LAYING, SHR DWN FD ADDED. DET. "B-A"		
3	3-6-74	7	"A" IN DETAIL 7-A DELETED		
4	3-6-74	7	COLLAR & REVISED LONG'L CUTOUT "A" IN DET. 8-A & C-DELETED BUTT & END CUTOUT		
5	3-7-74	7	"B" IN DET. "B", REVERSED LAP AT SECOND DK.		
6	3-26-74	4	"A" ADD DIM 2'-6" ABOVE INNERBOTTOM & DIM 1'-0" ABOVE SECOND DK.		
7	3-26-74		(1) ADD PLAN NOTED "A" ADD DIM. PERPENDICULAR TO CENTERLINE & DIM. 2'-0" ABOVE INNERBOTTOM. (2) ADD NEW DETAILS "A" & "B" (3) ADD NOTE "A" ON PLAN (4) ADD NOTE "A" ON DETAIL "A" & "B" (5) ADD NOTE "A" ON DETAIL "A" & "B" (6) ADD NOTE "A" ON DETAIL "A" & "B" (7) ADD NOTE "A" ON DETAIL "A" & "B" (8) ADD NOTE "A" ON DETAIL "A" & "B" (9) ADD NOTE "A" ON DETAIL "A" & "B" (10) ADD NOTE "A" ON DETAIL "A" & "B" (11) ADD NOTE "A" ON DETAIL "A" & "B" (12) ADD NOTE "A" ON DETAIL "A" & "B" (13) ADD NOTE "A" ON DETAIL "A" & "B" (14) ADD NOTE "A" ON DETAIL "A" & "B" (15) ADD NOTE "A" ON DETAIL "A" & "B" (16) ADD NOTE "A" ON DETAIL "A" & "B" (17) ADD NOTE "A" ON DETAIL "A" & "B" (18) ADD NOTE "A" ON DETAIL "A" & "B" (19) ADD NOTE "A" ON DETAIL "A" & "B" (20) ADD NOTE "A" ON DETAIL "A" & "B" (21) ADD NOTE "A" ON DETAIL "A" & "B" (22) ADD NOTE "A" ON DETAIL "A" & "B" (23) ADD NOTE "A" ON DETAIL "A" & "B" (24) ADD NOTE "A" ON DETAIL "A" & "B" (25) ADD NOTE "A" ON DETAIL "A" & "B" (26) ADD NOTE "A" ON DETAIL "A" & "B" (27) ADD NOTE "A" ON DETAIL "A" & "B" (28) ADD NOTE "A" ON DETAIL "A" & "B" (29) ADD NOTE "A" ON DETAIL "A" & "B" (30) ADD NOTE "A" ON DETAIL "A" & "B" (31) ADD NOTE "A" ON DETAIL "A" & "B" (32) ADD NOTE "A" ON DETAIL "A" & "B" (33) ADD NOTE "A" ON DETAIL "A" & "B" (34) ADD NOTE "A" ON DETAIL "A" & "B" (35) ADD NOTE "A" ON DETAIL "A" & "B" (36) ADD NOTE "A" ON DETAIL "A" & "B" (37) ADD NOTE "A" ON DETAIL "A" & "B" (38) ADD NOTE "A" ON DETAIL "A" & "B" (39) ADD NOTE "A" ON DETAIL "A" & "B" (40) ADD NOTE "A" ON DETAIL "A" & "B" (41) ADD NOTE "A" ON DETAIL "A" & "B" (42) ADD NOTE "A" ON DETAIL "A" & "B" (43) ADD NOTE "A" ON DETAIL "A" & "B" (44) ADD NOTE "A" ON DETAIL "A" & "B" (45) ADD NOTE "A" ON DETAIL "A" & "B" (46) ADD NOTE "A" ON DETAIL "A" & "B" (47) ADD NOTE "A" ON DETAIL "A" & "B" (48) ADD NOTE "A" ON DETAIL "A" & "B" (49) ADD NOTE "A" ON DETAIL "A" & "B" (50) ADD NOTE "A" ON DETAIL "A" & "B" (51) ADD NOTE "A" ON DETAIL "A" & "B" (52) ADD NOTE "A" ON DETAIL "A" & "B" (53) ADD NOTE "A" ON DETAIL "A" & "B" (54) ADD NOTE "A" ON DETAIL "A" & "B" (55) ADD NOTE "A" ON DETAIL "A" & "B" (56) ADD NOTE "A" ON DETAIL "A" & "B" (57) ADD NOTE "A" ON DETAIL "A" & "B" (58) ADD NOTE "A" ON DETAIL "A" & "B" (59) ADD NOTE "A" ON DETAIL "A" & "B" (60) ADD NOTE "A" ON DETAIL "A" & "B" (61) ADD NOTE "A" ON DETAIL "A" & "B" (62) ADD NOTE "A" ON DETAIL "A" & "B" (63) ADD NOTE "A" ON DETAIL "A" & "B" (64) ADD NOTE "A" ON DETAIL "A" & "B" (65) ADD NOTE "A" ON DETAIL "A" & "B" (66) ADD NOTE "A" ON DETAIL "A" & "B" (67) ADD NOTE "A" ON DETAIL "A" & "B" (68) ADD NOTE "A" ON DETAIL "A" & "B" (69) ADD NOTE "A" ON DETAIL "A" & "B" (70) ADD NOTE "A" ON DETAIL "A" & "B" (71) ADD NOTE "A" ON DETAIL "A" & "B" (72) ADD NOTE "A" ON DETAIL "A" & "B" (73) ADD NOTE "A" ON DETAIL "A" & "B" (74) ADD NOTE "A" ON DETAIL "A" & "B" (75) ADD NOTE "A" ON DETAIL "A" & "B" (76) ADD NOTE "A" ON DETAIL "A" & "B" (77) ADD NOTE "A" ON DETAIL "A" & "B" (78) ADD NOTE "A" ON DETAIL "A" & "B" (79) ADD NOTE "A" ON DETAIL "A" & "B" (80) ADD NOTE "A" ON DETAIL "A" & "B" (81) ADD NOTE "A" ON DETAIL "A" & "B" (82) ADD NOTE "A" ON DETAIL "A" & "B" (83) ADD NOTE "A" ON DETAIL "A" & "B" (84) ADD NOTE "A" ON DETAIL "A" & "B" (85) ADD NOTE "A" ON DETAIL "A" & "B" (86) ADD NOTE "A" ON DETAIL "A" & "B" (87) ADD NOTE "A" ON DETAIL "A" & "B" (88) ADD NOTE "A" ON DETAIL "A" & "B" (89) ADD NOTE "A" ON DETAIL "A" & "B" (90) ADD NOTE "A" ON DETAIL "A" & "B" (91) ADD NOTE "A" ON DETAIL "A" & "B" (92) ADD NOTE "A" ON DETAIL "A" & "B" (93) ADD NOTE "A" ON DETAIL "A" & "B" (94) ADD NOTE "A" ON DETAIL "A" & "B" (95) ADD NOTE "A" ON DETAIL "A" & "B" (96) ADD NOTE "A" ON DETAIL "A" & "B" (97) ADD NOTE "A" ON DETAIL "A" & "B" (98) ADD NOTE "A" ON DETAIL "A" & "B" (99) ADD NOTE "A" ON DETAIL "A" & "B" (100) ADD NOTE "A" ON DETAIL "A" & "B"		

DRAWN: C. Chiarenza
TRACED: [illegible]
DESIGN: [illegible]
JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SHIPYARD PLANT NO. 11819

SCALE 3/16"=1'-0" DATE October 1973
DRAWN ---------- APPROVED ----------
TRACED ---------- APPROVED ----------
ORDERED BY ---------- APPROVED ----------

PLAN NO. H4639-09-03-17 ALT NO. 6

LONGITUDINAL BULKHEAD
UNIT "B"
30'-11" OFF ℄
FRAMES 137 TO 142 INCL.

APPROVAL LETTERS					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
ABS	11-29-73				
U.S.C.G.	11-29-73				
N.S.R.B.	11-29-73				
LLOYD'S REG.					
OTHER					

U.S. GOVT. CONTRACT NO. N-ONR-271-71

H-1639

H 4639-4640

BETHLEHEM STEEL CORP. JULY 1974

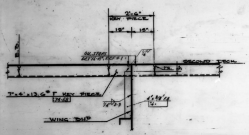
8X

H-4639-09-03-17 ALT 6

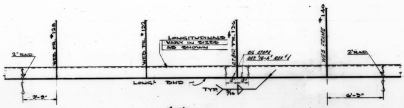
H-59

-3-

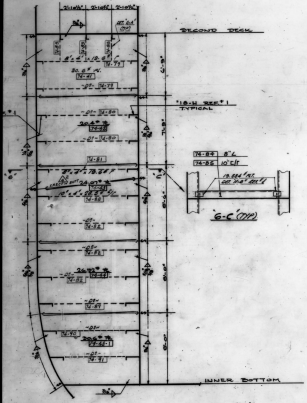
-2-



6-A
DECK LONGL & BHD STIFF. CONNECTION
LOOKING INBOARD

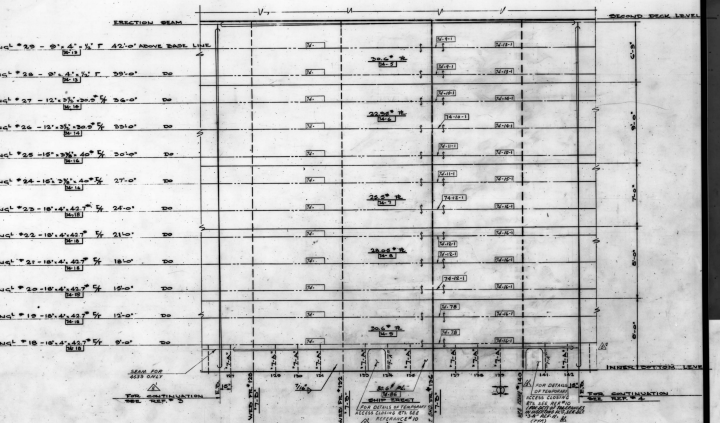


4-A
TYPICAL DETAILS OF LONGITUDINALS



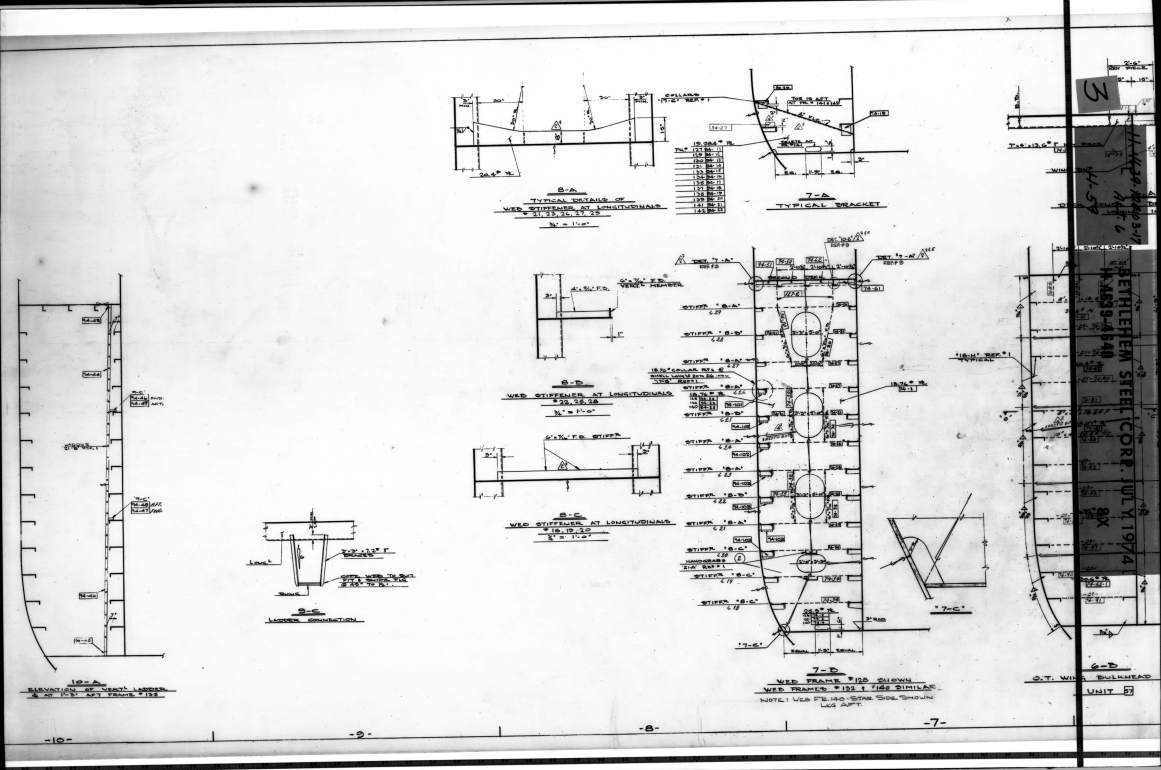
6-C (TYP)

6-D
O.T. WING BULKHEAD AT FR. 136
UNIT 57

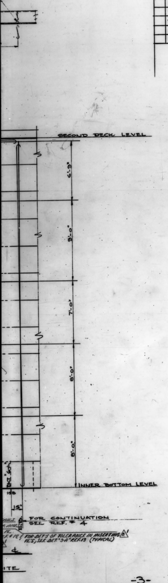


4-B
ELEVATION OF LONGITUDINAL BULKHEAD
FRAMES 127 TO 142 INCL. UNIT 56 & 57
PORT SIDE SHOWN LOOKING OUTBOARD STBD SIDE OPP.

BETHLEHEM STEEL CORP. JULY 1974
H 4638-4640
8X

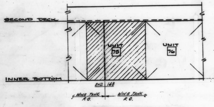


BETHLEHEM STEEL CORP. JULY 1974
H-4639-4640
8X
3
8-A
TYPICAL DETAILS OF WEB STIFFENER AT LONGITUDINALS
7-A
TYPICAL BRACKET
8-B
WEB STIFFENER AT LONGITUDINALS
8-C
WEB STIFFENER AT LONGITUDINALS
7-D
WEB FRAME #128 SHOWN
WEB FRAMES #132 & #140 SIMILAR
NOTE: WEB FR. 140 - STAR SIDE SHOWN LOG AFT.
9-C
LADDER CONNECTION
10-A
ELEVATION OF VERT. LADDER
6-D
O.T. WING BULKHEAD
UNIT 27
-10-
-9-
-8-
-7-



BILL OF MATERIAL

REV.	ITEM	QUAN.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PATT OR SYMBOL NO	REMARKS	REQ'D NO	JOB NO
6'	1	4	VERT. L LADDER "X" AS NOTED	STEEL	ABS OR EQUIV.	21-D' REF.# 1	SEE BELOW FOR MATERIAL		
	2	16	SAFETY HANDGRABS X= 6'	"	" " "	21-A REF.# 1	1" SQ. BAR LENGTH TO SUIT		
	3								
6'	4	8	STGRS – 3"x½" F.B. L=39'-0"	STEEL					
6'	5	156	RUNGS – 1" SQ. BAR L= 1'-3"	"					
6'	6	16	CLIPS – 3"x½" F.B. L= 4"	"					
6'	7	16	INTERMED. BRACES L=2'-6"	"					
	8								
	9								
	10								
	11								
	12								



KEY PLAN 3'

GENERAL NOTES:

1- ALL WELDS & PLATE EDGE PREPARATION FOR SEAMS & BUTTS TO BE IN ACCORDANCE WITH A.B.S. AND REF. # 2

2- WEB FRAMES ARE DRAWN PORT SIDE LOOKING FORWARD. STB'D SIDE SIMILAR TO OPPOSITE HAND.

3- WELDING TO BE AS FOLLOWS:

a) TRANSVERSE WEB FRAME BOUNDARY CONNECTION TO BE ¼" ALL AROUND EXCEPT AS FOLLOWS:
TO INNER BOTTOM : 7/16"

b) ALL OTHER WELDING TO BE ¼" EXCEPT WHERE NOTED.

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
8	7/24/73	3	1- AMENDED NOTE PERTAINING TO TEMP ACCESS PL. IN DET. "4-B" 2- ADDED REF. 13. ALT. ADDED TO FACILIATE ERECTION.	HAS	(USCG 5-4-73, ABS 7-24-73)

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	10/1/70		THIS PLAN IS A DUPLICATE OF PLAN NO. H4622-129-03-18 REV. 4[3] PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS:	BP	
2	11/18/70		1) DELETED RESERVATION ON BHD 144. 2) DELETED WORD "MOLASSES" FROM KEY ELEVATION.	CBP	USCG 1/8/71
	9/14/70	6	3) IN DET. "6-B" F.B. FITTED BELOW 2ND DECK & WEB PL LAPPED. REF. DWG. #11 ADDED. DET "5-A" DELETED.	R.J.C.	OWNER 1/4/71 ABS 2-11-71
	12/15/70	6	4) IN DET. "6-A" DELETED COLLAR PL. @ SHELL LONG'L & REVISED CUTOUT.	A.K.	
		8	5) IN DETS. 7-A & 7-C DELETED BUTT & RAD. CUTOUT.		
			6) IN DET. 6-B - REVERSED LAP AT SECOND DK.	CBP	
	1/28/70	4	7) PLT. SEAM 2'-6" ABOVE INNERBOTTOM HAS BEEN ELIMINATED.		
3	3/11/71	2	1) KEY PLAN ALTERED TO SUIT NEW CONFIGURATION OF O.T. WING BHDS.		
		4	2) PLT. SEAM 2'-6" ABOVE INNERBTM. HAS BEEN REPLACED.		OWNER 1-30-71
		8	3) WEB FRAME AT FR. # 148 CHANGED TO O.T. BHD. & ALL DETAILS ALTERED ACCORDINGLY. 4) LADDER POSITION ALTERED TO SUIT TANK CONFIGURATION. ALL TO SUIT DEPARTURE # 022	LWB.	ABS. 5/18/71 USCG 5-17-71
4	2/28/71	4	1 IN "4-B" ADDED INSERT PL @ FR. 148, TO SUIT ABS. APPL. (OF H-4639-129-03-25) 5-18-71.	A.K.	USCG, OWNER, ABS
5	9/2/71	6	1. IN DET. 6-A ADDED COLLAR	J.W.	NJT 9.20.71 USCG 10-13-71 ABS 11-24-71
		6 8	2. IN DET. 6-B & 8-B ADDED ERECTION BUTT ITEM 2 TO SUIT ERECTION OF STRUCTURE ON WAYS IN LIEU OF GRAVING DOCK		
6	11/26/71	8 2	1 IN "8-A" ADDED LADDER 1'-3" AFT FR. 146; IN B.M. REVISED QUAN. OF ITEM # 1, 4, 5, 6, 7 (YIS 37)	P.K.	NJT 12.1.71 USCG 1/19/72 ABS 2/3/72
7	5/10/72	4	1. IN "4-B", ADDED TEMP ACCESS CLOSING PL. IN LONG'L BHD & RELATED SEAM 2'-6" ABV. INNERBOTTOM. 2 IN "REF. PLAN LIST" ADDED ITEM # 12	P.K.	ABS 7/10/72 USCG 6/30/72

HULL	DESIGN	CHARGE
4640	OCEANIC	4639
4639	OCEANIC	4639

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE OCTOBER 1970
DRAWN C/B CBP APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639-129-03-18 ALT. NO. 8[2]

LONGITUDINAL BULKHEAD
UNIT # 75
36'-1½" OFF ℄
FRAMES 143 TO 158 INCL.

APPROVAL LETTERS

HULL					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-10-70				
A.B.S.	1-8-71				
U.S.C.G.	11-30-70				
LLOYD'S R.S.					
U.S.P.H.S.					

O.D. MARKS	
12-22-70	9-2-71
1-21-71	
4-23-71	

REFERENCE PLANS

NO.	PLAN NO.	TITLE
13	H-4639-129-03-20	LONG'L BHD. UNIT 77 36'-1½ OFF ℄ FRS. 175-190 INCL.
12	H-4639-129-99-9	ATTACHMENT OF LONG'L BHD. CLOSING PL.
11	H4639-129-03-14	LONG'L BHD, WEBS BEL. 2ND DK & WING BHD - FRS. 79-94
10	H4639-129-06-9	CONTAINER STOWAGE NO. 3 HOLD SHT 2
9	H4639-129-06-8	CONTAINER STOWAGE NO. 3 HOLD SHT 1
8	H4639-129-06-7	CONTAINER STOWAGE NO. 4 HOLD SHT. 2
7	H4639-129-06-6	CONTAINER STOWAGE NO. 4 HOLD SHT. 1
6	H4639-129-05-2	SHELL EXPANSION
5	H4639-129-03-25	STRUCTURE BET. 2ND DK. & UP. DK.
4	H4639-129-03-19	FRS 159 TO 174 UNIT # 76
3	H4639-129-03-17	FRS 127 TO 142 UNIT # 74
2	STD-129-00-2	PLATE EDGE DETAILS FOR STD. WELD
1	STD-129-00-1	STRUCTURAL DETAILS

UAO-39446-F

DATE OF ISSUE

ALTERATION	1	1	2	2	3	3	4	4	4	5	6	7	8
ENGINEERING DISTRIBUTION	10/27/70	10/7/70	12/17/70	1/22/71	3/1/71	3/26/71	4/27/71	8/11/71	9/28/71	12/10/71	5/22/72	4/11/73	
TOTAL ENG'R. DIST.	13	7	9	9	2	12	9	15	7	18	17	19	18
TOTAL YARD DIST.	19	19	30	30	30	32	19	19	16				

MAIL: OWNERS 9/INSP., AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A. & INSP., U S NAVY, U.S.C.G., JOINER CONT'R., PEPERSACK
INSPECTION: OWNER'S INSP., AM. BU. INSP., LLOYD'S INSP., U.S.M.A. INSP., U.S. NAVY INSP., U.S.C.G. INSP.
OFFICE: HULL DRAFT.-21, MACH. DRAFT.-22, ELEC. DRAFT.-23, OUTFIT. DRAFT.-25, ESTIMATING, C.O. SCHAUB
MISC.: PRODUCTION (BCD), ORDER DEPT., JOINER CONT. YARD
YARD: YARD DISTRIBUTION, GPM, PIECE RATE-11, TEST DEPARTMENT, A.J. DALBY, GROUND ASSEMBLY, 35 DEPT
STRUCTURAL: E. TURNIS, J. TARDLEY, NO. WAY, NO. WAY, NO. WAY, NO. WAY, STRUCT. SUPER., OPTICAL DETAIL-48, WET DOCK
MACH'Y & OUTFIT.: PIPE SHOP-52, OUTFIT. #1 PIER, PIPE DRAFT.-52, BOILER SHOP-58, OUTSIDE MACH.-60, ELECTRIC SHOP-70, SHEET MET. SHOP-74, COPPER SHOP-81, PAINT SHOP-78, WELDING
OTHER: MOLD LOFT-41, BRACKET SHOP, G. MACH. SHOP, ORDER DEPT.

4639, 40, ALT. 8[2]

H-60 20 SQ.FT.

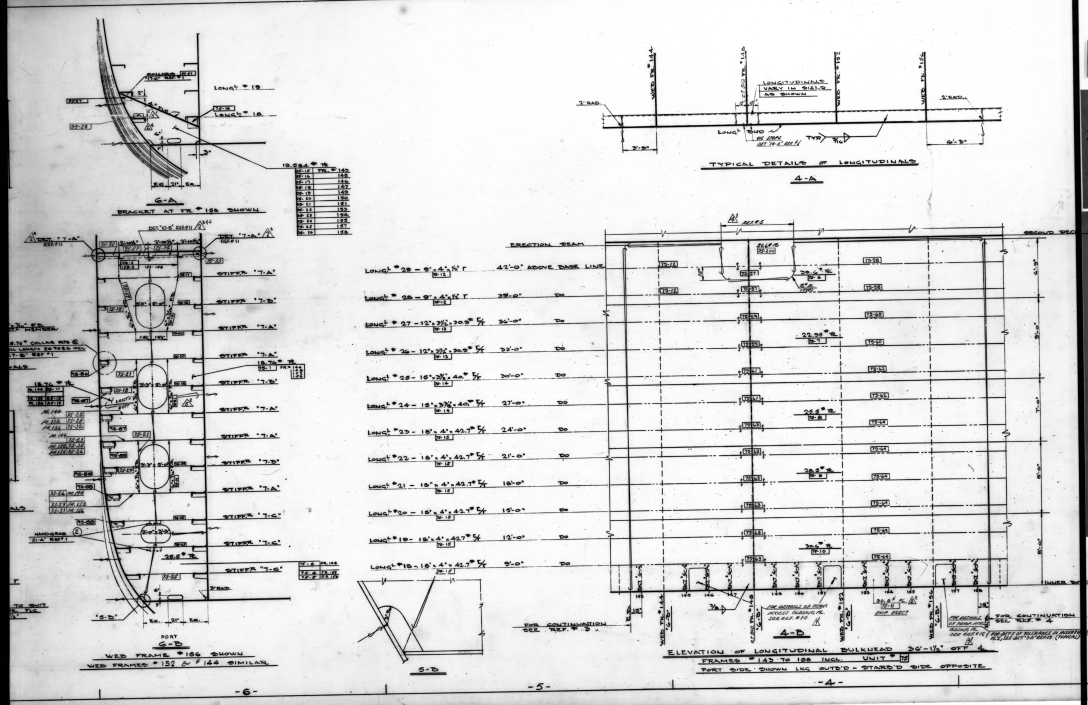
-3- 2 1

$00.05

H-4639-129-03-18
ALT 8
H-60

1

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

2

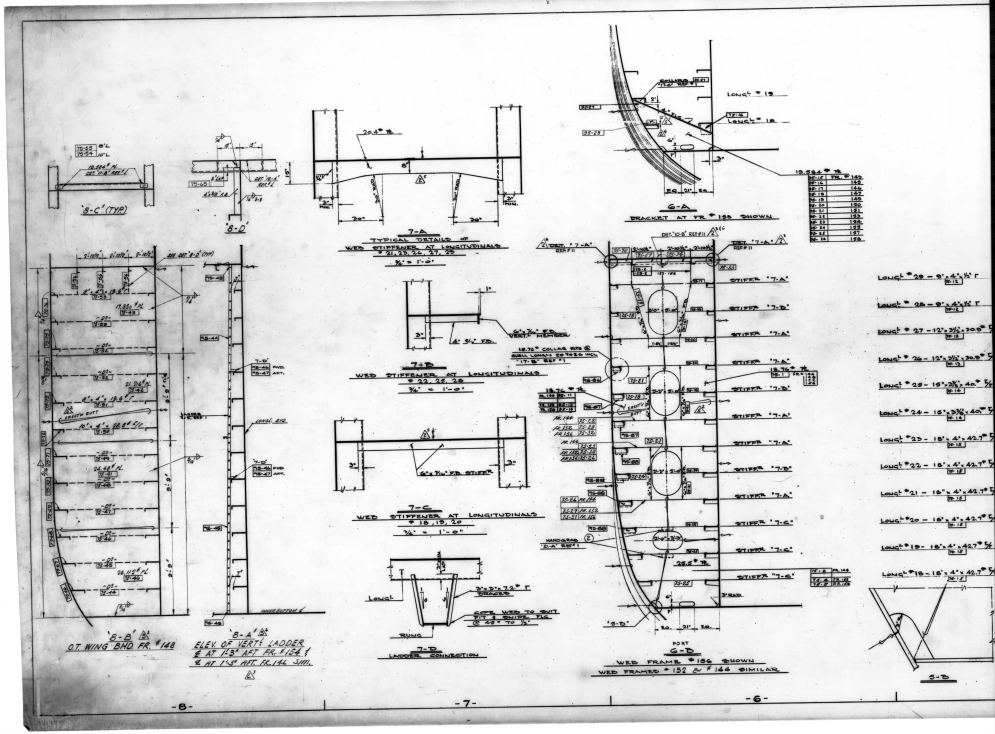
H-60

-6-

-5-

-4-

-3-



3

H-4639-129-03-17
ALT. 8
H-60

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

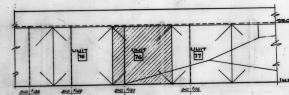
BILL OF MATERIAL

NO.	NUMBER	DESCRIPTION	MATERIAL SPEC.	MATERIAL GRADE, TYPE, OR SPECIAL REQ.	REMARKS SEE BELOW FOR MATERIAL	WEIGHT EACH	WEIGHT TOTAL
1	2	VERT. LADDER, 1'-6" WIDE	STEEL	AS A BOVE	1'-2" RUNG SPACING		
2							
3							
4	4	STEPS - 3'-1½" TO L=60°	STEEL	"			
5	86	RUNGS - 1"ø SQ. BAR, L=11'-8"	"	"			
6	16	CLIPS - 2"x½" THK. L= 4"	"	"			
7	8	INTERMEDIATE BRACES L=2'-5"	"	"			
8							
9							
10							
11							
12							

IN FUEL OIL TANK

18'-3¾" AT 60° TO CL ON UNIT # 37

SECOND DECK



KEY PLAN

GENERAL NOTES:

1- ALL WELDS & PLATE EDGE PREPARATION FOR WELDS & CUTS TO BE IN ACCORDANCE WITH A.S.S. AND N.S.S.

2- FRAMES ARE DRAWN FIRST SIDE LOOKING FORWARD, SIDED SIDE SIMILAR TO OPPOSITE HAND.

3- LIGHTENING & ACCESS HOLES TO BE GENERALLY IN PANEL UNLESS OTHERWISE NOTED.

4- WELDING TO BE AS FOLLOWS:

a) TRANSVERSE WEB FRAME BRACKET CONNECTION TO BE ¼ CONTINUOUS FILLET ALL AROUND EXCEPT AS FOLLOWS:
TO INNER BOTTOM ¼ CONTINUOUS (CONT) LAPPED CONNECTION ¼ CONTINUOUS (CONT) TO INNER BOTTOM ¼ CONTINUOUS (CONT) ALL AROUND.

b) BULKHEAD BOUNDARY CONNECTION TO BE ¼ CONTINUOUS EXCEPT AT INNER BOTTOM WHICH IS ¼ CONTINUOUS (CONT)

c) ALL OTHER WELDING TO BE ¼ CONTINUOUS EXCEPT WHERE NOTED.

SET	FRAME	SPACING
25	171	2.5
26	172	2.5

INNER BOTTOM LEVEL

CONTINUATION

UAD 39446 N

NO.	PLAN NO.	TITLE
4	4639-4640-120-3-12	LONGITUDINAL DIAPHRAGM UNIT 4 FRAMES 109 TO 174
3	4639-4640-120-3-11	LONGITUDINAL DIAPHRAGM UNIT 4 FRAMES 1 TO 108
2	4639-4640-120-3-10	LONGITUDINAL DIAPHRAGM UNIT 4 FRAMES 175 TO 230
1	4639-4640-120-3-9	LONGITUDINAL DIAPHRAGM UNIT 4 FRAMES 231 TO 300
0	4639-4640-120-3-8	STRUCTURAL DETAILS

REFERENCE PLANS

ALTERATIONS

NO.	DATE	DESCRIPTION	INSP. BY	DATE
1	11/74	THIS PLAN IS A DUPLICATE OF PLAN 4639-4640-120-3-9 ALT 1 WITH THE FOLLOWING CHANGES AS NOTED: REVISION NO. AND DATE BLOCK, ALTERATION BLOCK, ADDITIONAL DETAILS ADDED AS REQUIRED. √ LIST OF REFERENCE PLANS UPDATED.		
	11/74	'A' LADDER "A-A" RELOCATED	RK	
2	12/74	ADD NEW ACCESS IN WEB AND STIFFENERS IN #2 WING SPACE. ADD REMOVE OF #2 FWD CARGO TK. ON #2 SPACE. ADD REMOVE OF #2 FWD CARGO TK. & WORKMANS ADD NEW ACCESS TO #2 SPACE. ALL AS PER ATTACHED SKETCH		
3	1/75	ADD NEW BRACKET AND FLANGE ON FRAME 109 UPTOMA AT #2 WING TK. AS PER ATTACHED SKETCH SHEET 2-3-11	PK	
4	2/75	ADD NEW 2'-6" ELLIP. LADDER & ACCESS, P.S. FROM 15'-6" AFT PR. REC. TO 15'-6" FWD PR. REC. RELOC. 15'-10" LIGHTING HOLE FROM P.S. 183-1/2 TO 181-1/2 & ADD P.S. SOCKET @ 7' TO RADIO PER ATTACHED SHT 22 SEPT DATED 2-19-75	RAM	
5	11/75	ADD 2'-6" X 3'-6" ELLIP. ACCESS & ERECTION BUTT TO UNIT ERECTION OF STRUCTURE ON WAYS IN LIEU OF GRAVING DOCK.	LM	
6	1/76	ADD 2'-6" RADIUS TRAPEZOIDAL ACCESS CLOSING PLATE IN SHELL AND ENCLOSURE FROM #2 TO #3 WING TANK AS PER PLAN DATED 1/76	RAM	
7	1/76	ADD 2" DIA. ST. PENETRATIONS THRU WEB FRAMES AT TOP OF TANK FOR INSTALLATION OF PRESSURE SENDING. ADD 2" PRESSURE SENDING PENETRATIONS TO FRAMES 108 & 174 AS PER CHANGE REQUEST.	RAM	

ADDED	2/25/75	
ADDED	2/25/75	
WELL	DESIGN	

JOB NO. 120

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 5/26/71
DRAWN DATE APPROVED
TRACED APPROVED
DESIGNED APPROVED

PLAN NO. 4639-4640-120-3-12 ALT NO. 1

LONGITUDINAL DIAPHRAGM
UNIT 4
36'-11¾" OFF ℄
FRAMES 109 TO 174

APPROVAL LETTERS

AGENCY	DATE	DATE	DATE	DATE	DATE
USCG	6/2/71				
ABS	6/2/71				
LLOYDS REG	6/2/71				
USN SUPSHIP					

EDMKS 6/1/71 6/2/71 6/2/71

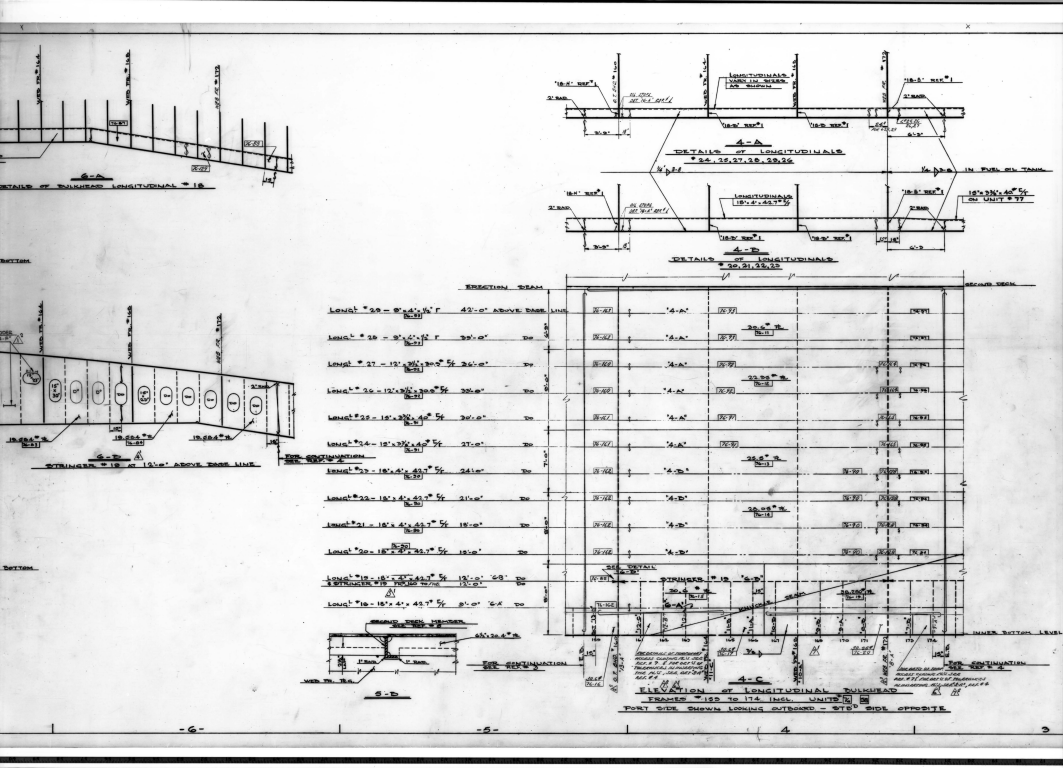
H-61

25 SEPT

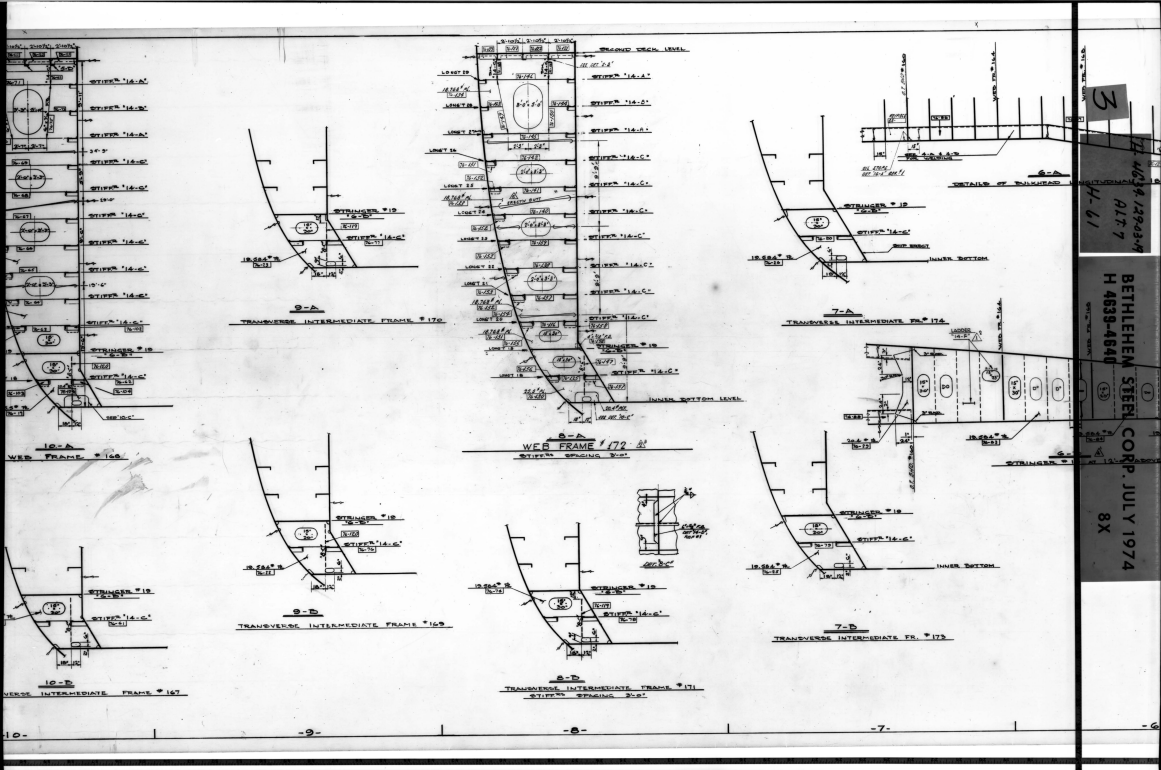
H 4639-4640 ALT 1 H-61

BETHLEHEM STEEL CORP. JULY 1974 8X

1



BETHLEHEM STEEL CORP. JULY 1974
8X



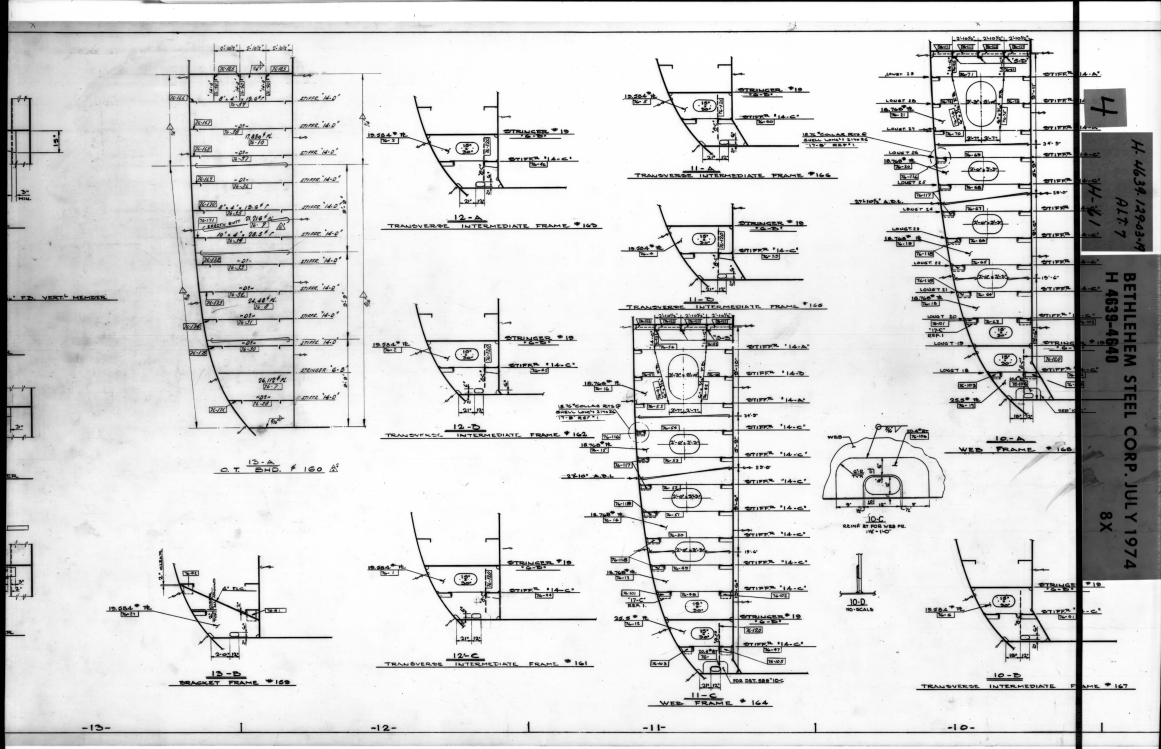
BETHLEHEM STEEL CORP. JULY 1974

H 4639-4640

8X

3

H-61



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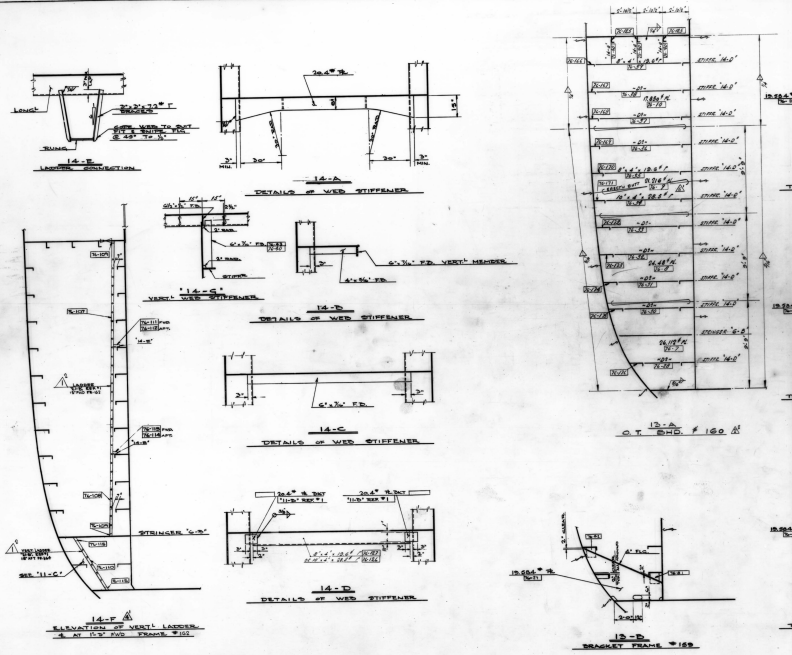
H-4639-129-03-M
ALT 7
H-41

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



5

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

H 4639.149-03-32 ALT 8

H 4639-4640

BETHLEHEM STEEL CORP. JULY 1974

H 4639-4640

8X

BILL OF MATERIAL

NO.	ITEM NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PROT. SYS. SYSTEM NO.	REMARKS SEE BELOW FOR MATERIAL	WEIGHT LBS	WT. MARK
1	2	VENT. LADDER, 1'X14'-0"	STEEL	ABS or EQUAL	3-05			
2	3	" " "	"	"	"	" " "		
3								
4	4	STIFF. = 3"x½" FB L=38'-0"	STEEL			ITEM 1		
5	5	" " " L=8'-0"	"			ITEM 3		
6	7a	ROUND - 1" DIA BAR L=1'-5"	"			ITEM 1		
7	7b	" " " L=1'-5"	"			ITEM 2		
8	8a	CLIPS - 3"x½" FB L=4'-0"	"			ITEM 18a		
9								
10	8	INTERMED. BRACKET L=8'	"			ITEM 18a		
11								
12								
13								

ALTERATIONS

NO.	DATE	DESCRIPTION	MADE BY	APP'D
		THIS PLAN IS A DUPLICATE OF PLAN H4639-4640-8 EXCEPT AS NOTED. PREPARED BY ABS WORLDWIDE TECHNOLOGY AND ENGINEERING DIVISION, 16855 NORTHCHASE DRIVE, HOUSTON, TEXAS 77060 (713) 873-9400 FOR BETHLEHEM STEEL CORP. SPARROWS POINT, MD. 21219		
1	7/74	1. ADD HOLES AT 7'-0" C-C FOR 3/4" DIA. BOLTS AT ITEM 4 AS SHOWN ON SECTION A-A AND DETAIL CONNECTED TO ADJ. LADDER SECTION. MOVE FIRST & LAST HOLE 3" FROM END OF ITEM 4. ADJUSTED ALL TO SUIT SHELL.	RC	
2	8/74	1. ADD "3x3x½" ANGLE CHANGED ABS LOCATION. ADDED ABS TO ITEMS 4, 5, 6, 7a, 7b, 8, 8a, 9 & 10. ADDED ITEM 11a.	RC	
3	10/74	1. ADD ITEM 12 (SHIELD) TO SUIT ABS REQ'T. ADDED ITEM 13 (SHIELD) TO SUIT ABS REQ'T.	RC	
4	1/75	ON PLANS "A & C" ITEM 4 LOCATED 3 LOWER EXCESS HOLE FROM 12'7x0.17 TO 13'1x0.94. 173 ø REQ. LIGHTNING HOLES TO SUIT REV. DET. 8'0"TS AGREE. THIS ITEM PER REQUEST BY ES DEPT. DATED MAY 15, 1975.		
5	8	1. 7"x4" HEAD INSERT AT ø AT END; IN UNIT 8-A&C. 2. ADD ITEM 17 (PLATE) AT END A&C.	RC	
6	7/1	1. IN DET "B" BEHIND HOOD ERECTION BOLT TO SUIT ERECTION OF STRUCTURE ON WAYS IN LIEU OF DRAWING BLOCK	JHB	
7	8	ITEM 8 (HOOD ITEM) APPLY PAINTING PR, PA, PAINT, AND TOUCH-UP SYS. PER ABS GUIDE E, IN FACE PLAN SHIP MARKS ITEM 8	RC	
8	8/1	1. ON 8" RAILINGS (ITEM 10) ADD 3/4" DIA. HOLES IN WEB AS SHOWN & ADDITIONAL 6" UNDER HOOD AS REQ'D TO SUIT SHOP DRAWINGS	RC	

NO.	DATE	DESIGN	CHANGE
4660		4639	
4639		4639	
NULL		DESIGN	CHANGE

JOB NO 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/4" = 1'-0" DATE 2/4 MAR/JUL/74
DRAWN Dubic, T.D. APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO 4639-8 -128-02-00 ALT NO. 8

LONGITUDINAL BULKHEAD UNIT 77 & 78
24'-11½" FWD & FRAMES 178 TO 190 INCL.

APPROVAL LETTERS					
HULL		DATE	DATE	DATE	DATE
APPROVED BY		DATE	DATE	DATE	DATE
OWNER					
A.B.S.					
U.S.C.G.					
LLOYD'S REG.					
U.S.N.S.					

DRAWN BY	CHECKED BY	APPROVED BY
G. MORRIS		
DATE 2/4 MAR/JUL/74		
SCALE 3/4"=1'-0"		

H-52 32.10 FT

UNIT	FRAMES	LENGTH
76	160 to 178	18'-0"
77	190 to 340	31'-9"

NO.	PLAN NO.	TITLE
5	H639-8343	
4	128-00-00	
3	128-00-01	
2	128-00-02	
1	128-02-00	

REFERENCE PLANS

SECOND DECK

INNER BOTTOM

UNIT 76 | UNIT 76a | UNIT 77 | UNIT 78 | UNIT 78

FWD. 237

KEY PLAN

GENERAL NOTES:

1- ALL WELDING & PLATE EDGE PREPARATION SHALL CONFORM & SHALL BE IN ACCORDANCE WITH ABS AND REF. 2

2- FRAMES ARE DRAWN PORT SIDE LOOKING FORWARD, WITH STBD SIDE SIMILAR, TO OPPOSITE HAND.

3- LIGHTENING & ACCESS HOLES TO BE CENTERED IN WEB, UNLESS OTHERWISE NOTED.

4- WELDING TO BE AS FOLLOWS:

a) WHERE STIFFENERS OR LONGLS PASS THROUGH BUTTED, WELL TRANSVERSE, THERE IS TO BE A CONTINUOUS FILLET WELD AROUND EACH SIDE OF EACH INTERSECTION. ALL WEB DOUBLING, STIFFENERS SHALL HAVE A CONTINUOUS WELD AT EACH END.

b) TRANSVERSE WEB FRAME BOUNDARY CONNECTION TO BE ¾" (INTERMITTENT) ALL AROUND, EXCEPT AS FOLLOWS:
TO INNER BOTTOM: ¾"x½" LARGE EXCEPTION: ⅝" TEC (INTERMIT) ALL AROUND.

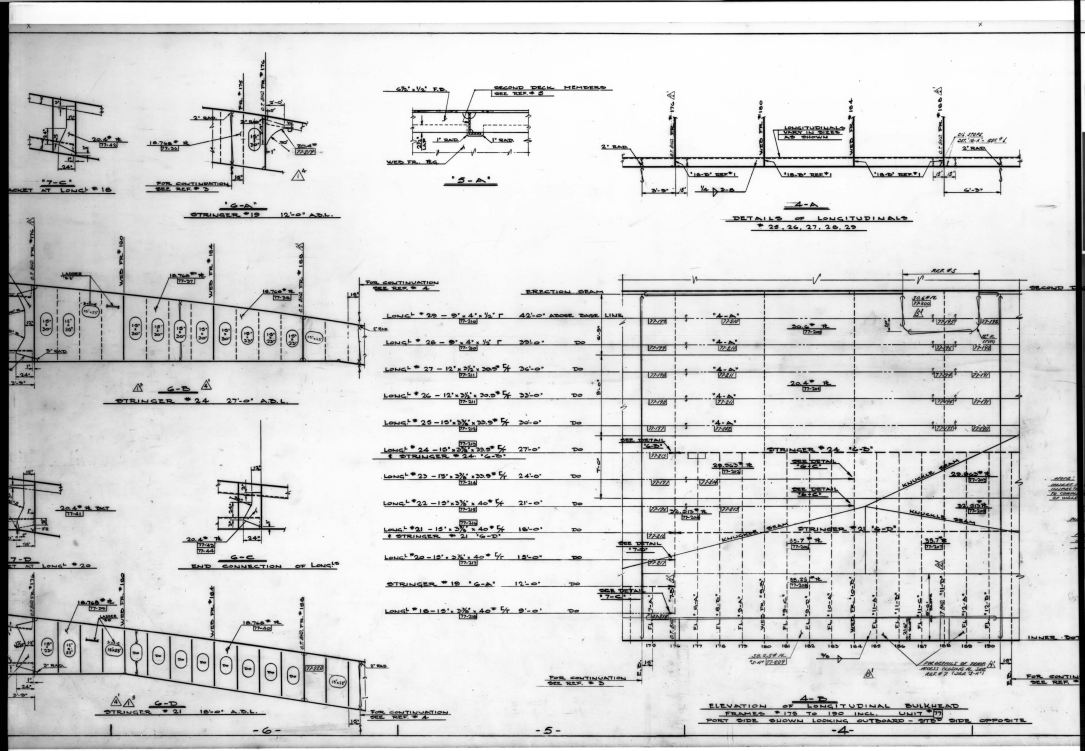
c) ALL OTHER WELDING TO BE ¼" (WELD (INTERMITTENT) EXCEPT WHERE NOTED.

INNER BOTTOM LEVEL

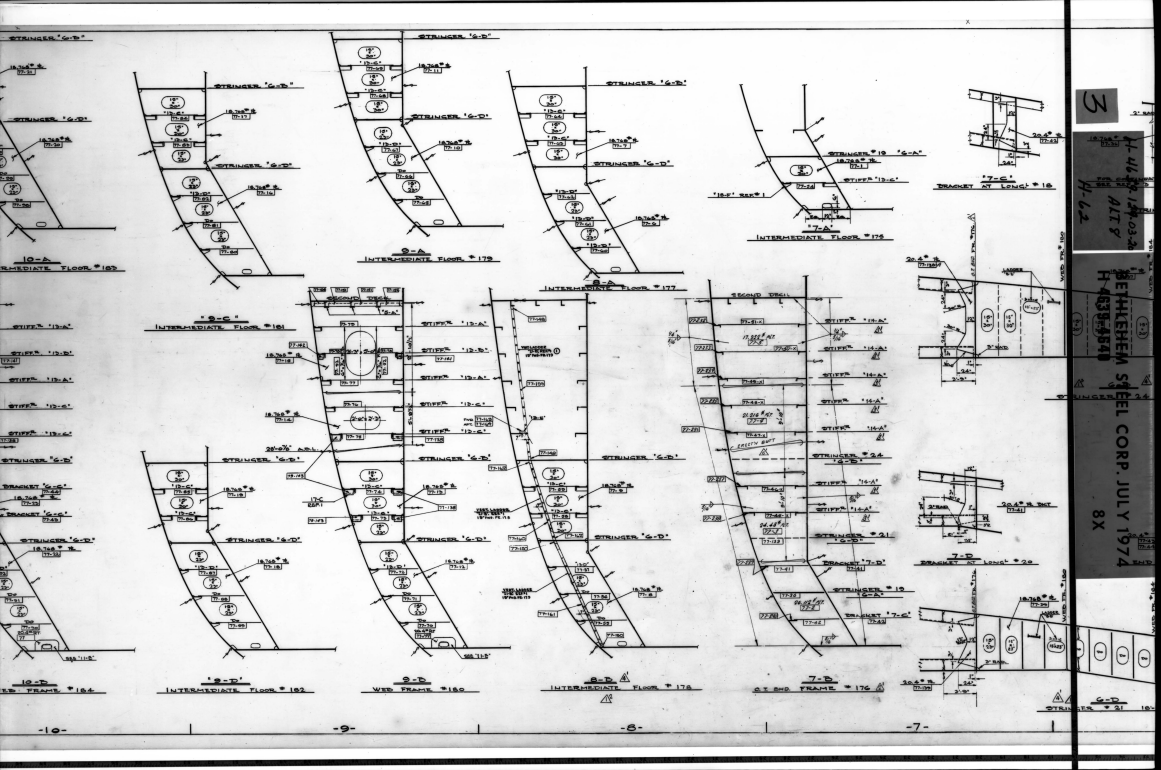
FOR CONTINUATION SEE SEC. A

-3-

-2-



BETHLEHEM STEEL CORP. JULY 1974
H 639-3640



BETHLEHEM STEEL CORP. JULY 1974
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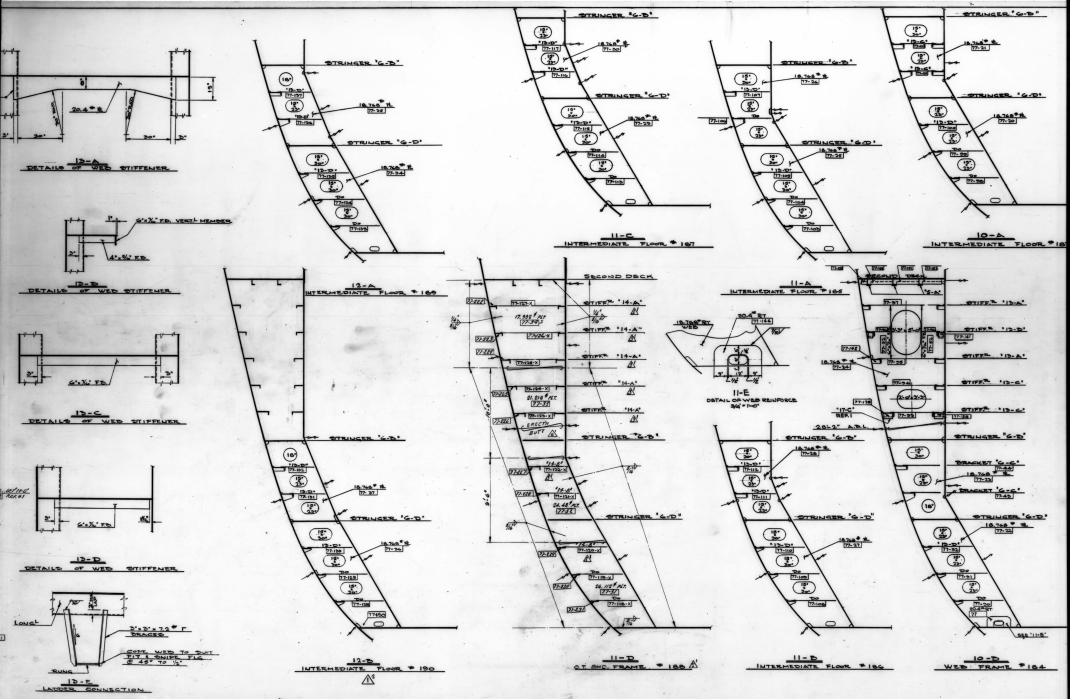
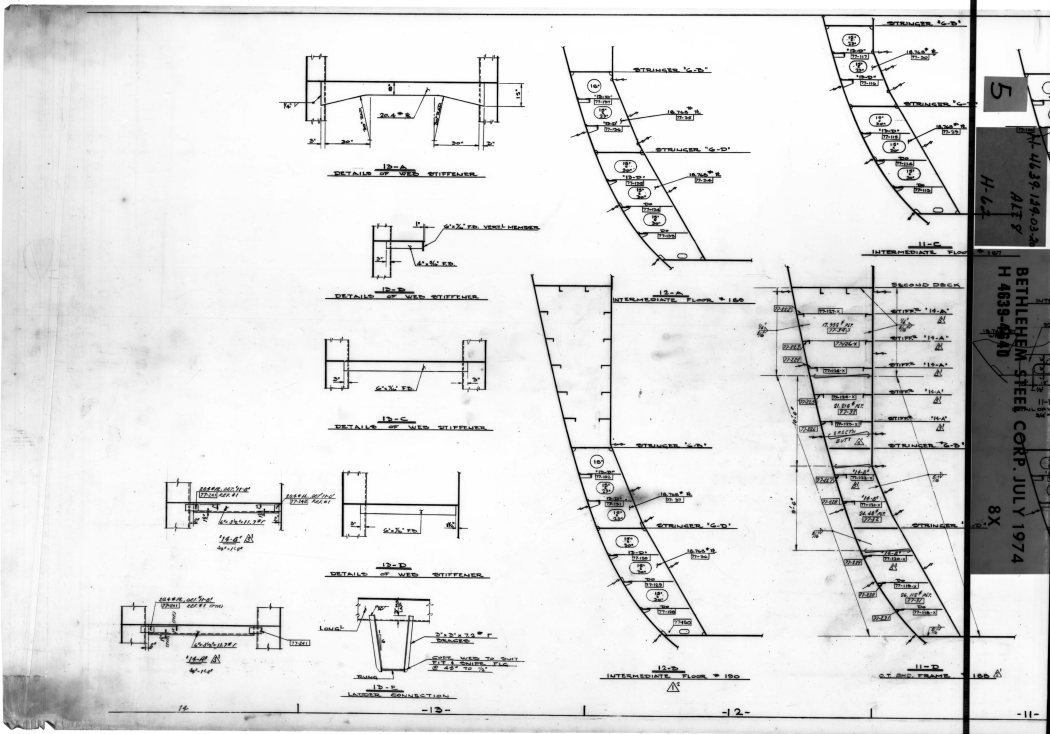


BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

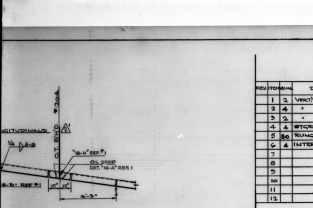
4
H-62



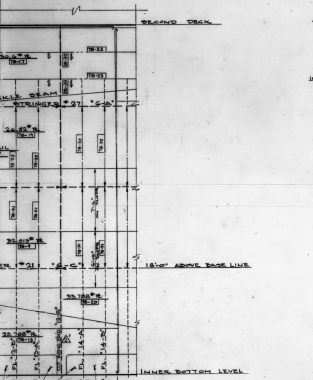
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
5
H-4639.129.03.20
ALT 8
H-62

BILL of MATERIAL

REV.	ITEM	QTY.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PART OR SYMBOL NO.	REMARKS	REQ'D W.O. NO.	JOB NO.
	1	2	VERT. LADDER, 5'-6" AND 10'-0"	STEEL	ASTM A 36 OR 32 BOT.		SEE BELOW THE MATERIAL	1180	
	2	4	"	"	"	"	"		
	3	2	"	"	"	"	"		
	4	6	STOOLS 3'-3" LONG	STEEL			ITEM 1 & 2		
	5	36	RUNGS - 1" DIA. BAR, L = 1'-5"	"			ITEMS 1, 2, & 3		
	6	4	INTERMED. BRACES L = 5"	"			ITEM 1 & 3		
	7								
	8								
	9								
	10								
	11								
	12								



KEY PLAN



GENERAL NOTES:

1- ALL WELDS & PLATE EDGE PREPARATION FOR WELDING SHALL BE IN ACCORDANCE WITH A.B.S. RULES, SEC. 2.

2- FRAMES ARE DRAWN PORT SIDE LOOKING FORWARD. STBD. SIDE SIMILAR TO OPPOSITE HAND.

3- LIGHTENING & ACCESS HOLES TO BE COVERED IN PANEL UNLESS OTHERWISE NOTED.

4- WELDING TO BE AS FOLLOWS:

5) UNLESS STRINGERS OR LONG'LS PASS THROUGH SLOTTED WEB FRAMES, THERE IS TO BE A NOTCH AT EACH INTERSECTION. ALL UNBRACKETED WEB FRAMES SHALL HAVE DOUBLE CONTINUOUS FILLET WELDING.

6) TRANSVERSE WEB FRAME BOUNDARY CONNECTIONS TO BE ½ (DOUBLE INTERMITTENT) OR ¾ (DOUBLE CONTINUOUS) ALL AROUND (VARIED OPTION) EXCEPT AS FOLLOWS:
- TO INNER BOTTOM ¾ (DOUBLE CONTINUOUS).
- LONGITUDINAL CONNECTION ⅝ T (SINGLE CONTINUOUS) ALL AROUND.

7) ALL OTHER WELDING TO BE ⅜ (DOUBLE INTERMITTENT) OR ½ (DOUBLE CONTINUOUS) (VARIED OPTION).

U.A.O.-31-41-X

SYMBOL	SHOWN	USED
1/2		
3/8		
5/8		
3/4		
5/8 T		

DELETED

NO.	PLAN NO.	TITLE
7	1-27-29-3	ARRANGEMENT OF LADDER AND RUNGS IN ALT.
6	1-27-29-13	Inner Bottom, Wing Tanks, Bhds. 304 to 344
5	1-27-29-5	Shell Exp. - Bhds. 70 to 188
4	1-27-29-4	Shell Exp. - Bhds. 188 to 304
3	1-27-29-2	Second Deck - Bhds. 70 to 304
2	1-27-29-1	Second Deck - Bhds. 304 to 344
1	1-27-29-6	Longitudinal Bulkhead Unit 3M

REFERENCE PLANS

ALTERATIONS

NO.	DATE	DESCRIPTION	MADE BY	APP'D
1	7/16	REVISED PLAN TO A DUPLICATION OF PLAN 1-27-29-6 AS BUILT. ADDED SATISFACTORY CONDITION BY SURVEY LETTER DATED 7-15-74. ADDED REGULATORY NOTICE AND NO. 1200911-116. TORSION BOOSTER AS FOLLOWS:	R.H.C.	
		LIST OF REFERENCE PLANS ADDED.	R.H.C.	
0	4/15	(2) RUNGS FITTED AT FR. 304 - 1" DIA. BAR, L = 1'-5" AT FR. 306 - SEE "B-B" LADDER RELOCATED - SEE 1-27-29-13 SHT. 2	R.H.C.	
3	2/15	ADDED SEE REFERENCE NO. 2 TO SHOW ACCESS ARRANGEMENT AT FRAME 304	R.H.C.	
2	6/14	ADDED SEE REFERENCE NO. 1 TO SHOW ACCESS ARRANGEMENT AT FRAME 304	R.H.C.	
1	5/14	ADDED SEE REFERENCE NO. 1 TO SHOW ACCESS ARRANGEMENT AT FRAME 304	R.H.C.	

4630 4639
4633 4632

HULL DESIGN CHANGE

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
QUINCY PLANT, MASS. 02169

DRAWN	DATE	7-4-74(R1)
TRACED	APPROVED	
CHECKED	APPROVED	

PLAN NO. 1-27-29-13-R2-2-31 ALT NO. 3

LONGITUDINAL BULKHEAD UNIT 3M

FRAMES + 191 TO 304 INCL.

APPROVAL LETTERS					
HULL APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS					
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
G.L.R.B.					

ALTERATION	DATE OF ISSUE
CONSTRUCTED	10-30-74
DISTRIBUTED	10-30-74
ALTERATION 1	10-30-74
ALTERATION 2	10-30-74
ALTERATION 3	10-30-74
ALTERATION 4	10-30-74
ALTERATION 5	10-30-74
ALTERATION 6	10-30-74
ALTERATION 7	10-30-74
ALTERATION 8	10-30-74
ALTERATION 9	10-30-74
ALTERATION 10	10-30-74
ALTERATION 11	10-30-74
ALTERATION 12	10-30-74
ALTERATION 13	10-30-74
ALTERATION 14	10-30-74
ALTERATION 15	10-30-74
ALTERATION 16	10-30-74
ALTERATION 17	10-30-74
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ALTERATION 19	10-30-74
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ALTERATION 22	10-30-74
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ALTERATION 24	10-30-74
ALTERATION 25	10-30-74
ALTERATION 26	10-30-74
ALTERATION 27	10-30-74
ALTERATION 28	10-30-74
ALTERATION 29	10-30-74
ALTERATION 30	10-30-74
ALTERATION 31	10-30-74
ALTERATION 32	10-30-74
ALTERATION 33	10-30-74
ALTERATION 34	10-30-74
ALTERATION 35	10-30-74
ALTERATION 36	10-30-74
ALTERATION 37	10-30-74
ALTERATION 38	10-30-74
ALTERATION 39	10-30-74
ALTERATION 40	10-30-74
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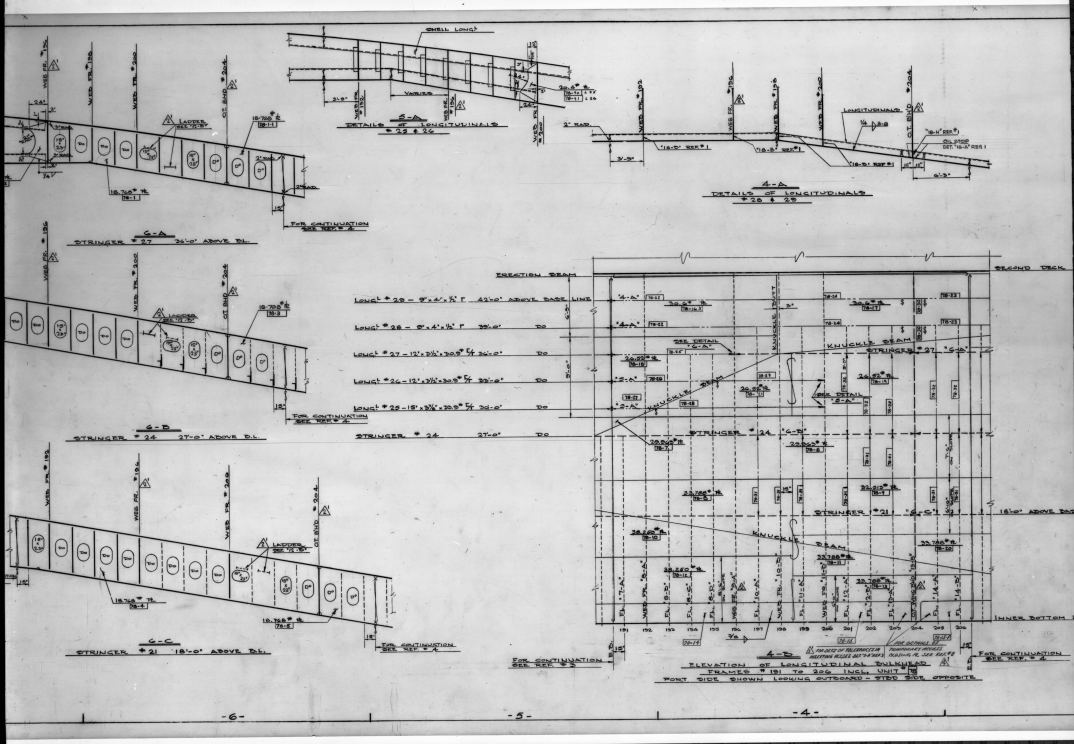
ALTERATION 92	10-30-74
ALTERATION 93	10-30-74
ALTERATION 94	10-30-74
ALTERATION 95	10-30-74
ALTERATION 96	10-30-74
ALTERATION 97	10-30-74
ALTERATION 98	10-30-74
ALTERATION 99	10-30-74
ALTERATION 100	10-30-74

SEE SHT. 2

SUB-MARKS:
1 2 3 4 5 6 7 8 9 10

H-63 28 SHTS

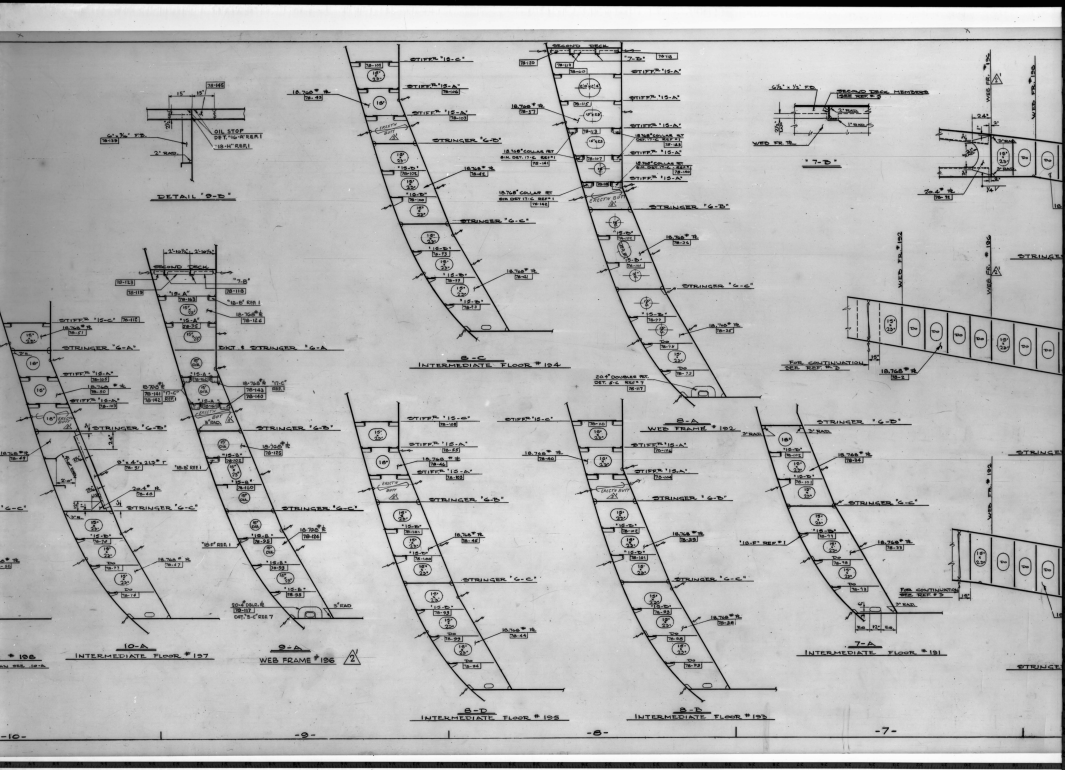
F 1
H-4639,4640,4632
ALT. 5
H-63
BETHLEHEM STEEL CORP. JULY 1974
8X



F 2

H-4639-129-03-21
ALT. 5
H-63

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 3

H-4639.129.03.21
ALT. 5
H-63

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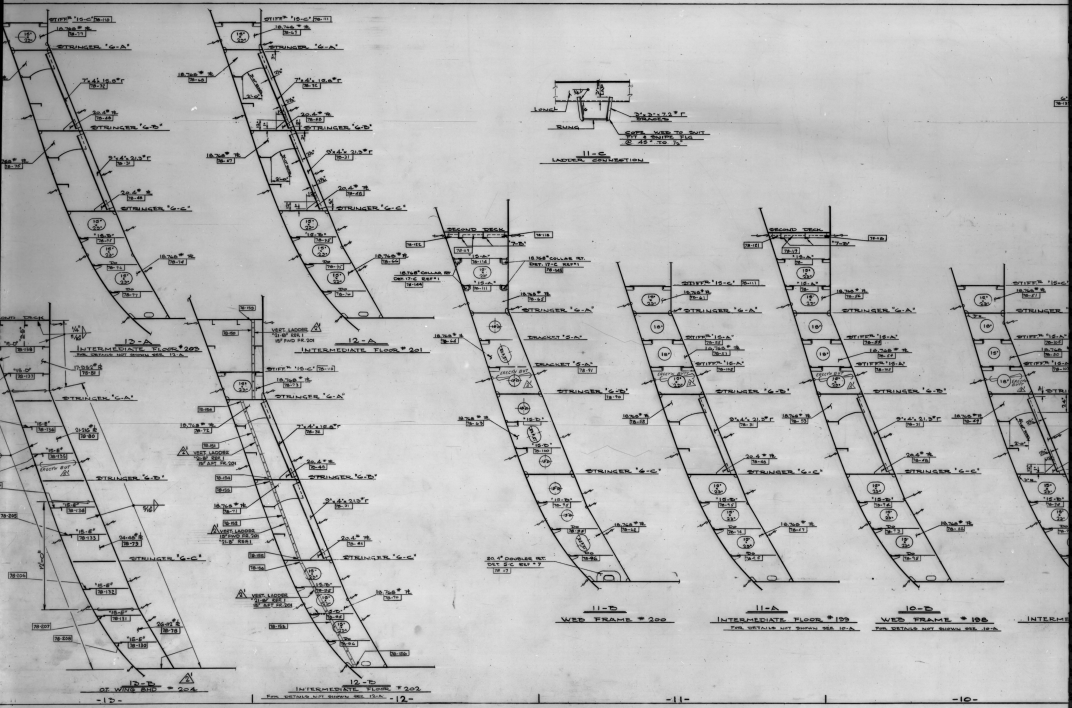
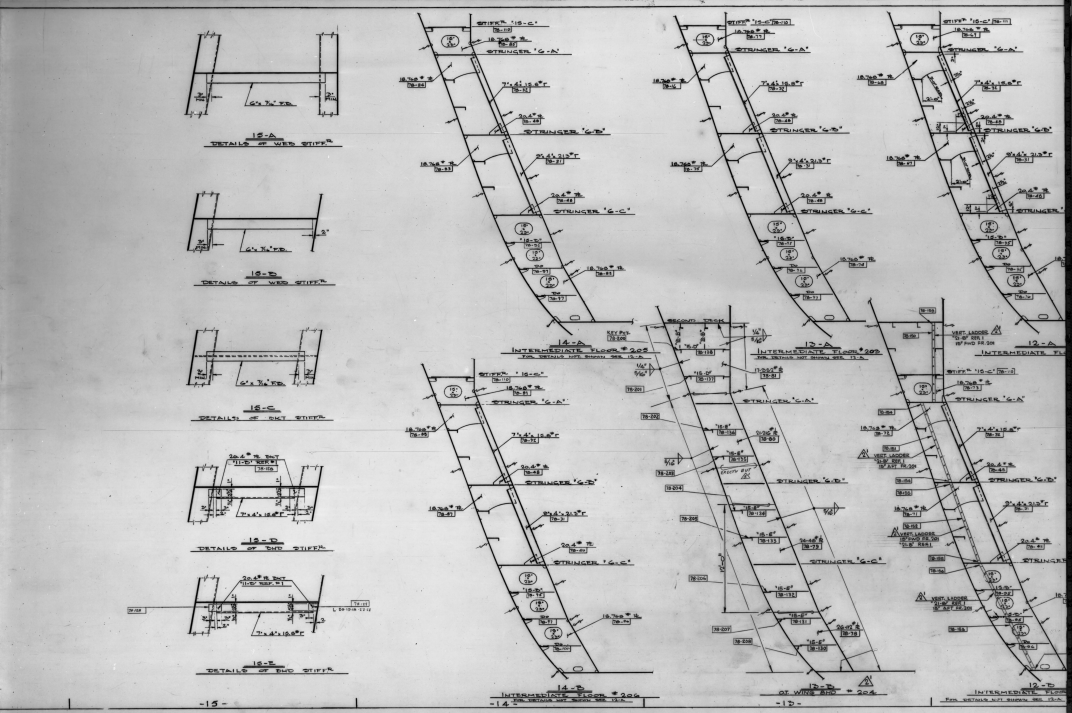
8X



F 4

H-4639-129.03-21
ALT. 5
H-6.3

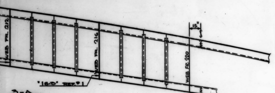
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



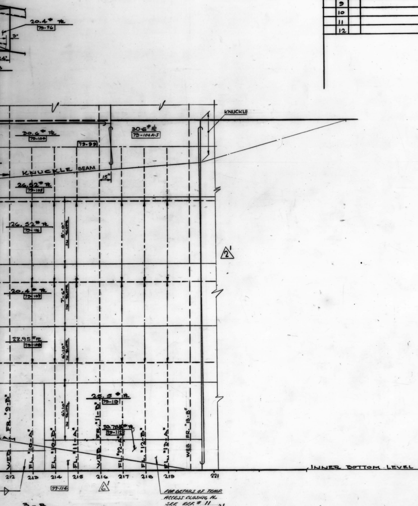
F 5

H-4639 129.03-21
ALT. 5
H-63

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



3-A
OF LONGITUDINAL #29



3-B
OF LONGITUDINAL BULKHEAD
FRAMES #207 TO 220 INCL. UNIT # 79 60
LOOKING OUTBOARD - STBD SIDE OPPOSITE

BILL OF MATERIAL

REV.	ITEM	REQ'D	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PATT. OR SYMBOL NO.	REMARKS	REQ'D NO.	JOB NO.
	1	2	VERT.L LADDER "X"=AS NOTED	STEEL	ABS OR EQUIV.	'21-B' REF. #1	SEE BELOW FOR MATERIAL		
	2								
	3								
	4	4	STGRS - 3"×½" FB. L=43'0"	STEEL					
	5	80	RUNGS - 1" SQ. BAR L=1'-3"	"					
	6								
	7								
	8								
	9								
	10								
	11								
	12								

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
			THIS PLAN IS A DUPLICATE OF PLAN NO. H4637-129-03-22 REV. 2 PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS:		J
1	3/16/71	5, 10,	1/ LIST OF REF. PLANS UPDATED 2/ LADDER FRS. 213 & 214 RELOCATED INBD.		
2		3 13	1/ LONGL. BHD EXTENDED FORWARD. ERECTION BUTT INTRODUCED AT 15" FWD FR. 220. 2/ FR. 220 MODIFIED FROM W.T. BHD. TO WEB FR. SEE "13-B" TO SUIT DEP. #022 3/ DETS. "4-B" "4-C" "4-D" & "4-E" DELETED.	R.J.C.	ABS 5/18/71 USCG 5-17-71 OWNERS 4-22-71
3	7/14/71	5 & 10	1) AT STRG. "5-A" & INTERMEDIATE FLR. "10-B": RELOC. LADDER BET. STGR. 36'-0" ABV. BL & 2ND DK. FROM 15" AFT TO 12" FWD FR. 214 TO AGREE WITH REF. #5.	F.E.W.	8.2.71 USCG 9-25-71 ABS 9-17-71
4	9/3/71	7, 9, 11, 13	1. IN DET. 7-B, 9-B, 11-B, & 13-B ADDED ERECTION BUTT TO SUIT ERECTION OF STRUCTURE ON WAYS IN LIEU OF GRAVING DOCK		9.20.71 USCG 10-13-71 ABS 11-24-71
5	5/10/72	3, 4	1. IN 3-B, ADDED TEMP. ACCESS CLOSING PL. IN LONG'L BHD. & DELETED SEAM 2'-6" ABV. INNER BOTTOM. 2. IN "REF. PLAN LIST", ADDED ITEM # 11.	P.K.	USCG ABS OWNERS
6	8/25/72	3	1 IN '3-B', DELETED SEAM BETWEEN FR'S. 214-220, 2'-6" ABV. INNER BOTTOM	P.K.	11/13/72

GENERAL NOTES:

1- ALL WELDS & PLATE EDGE PREPARATION FOR SEAMS & BUTTS TO BE IN ACCORDANCE WITH A.B.S. AND REF. #2

2- FRAMES ARE DRAWN PORT SIDE LOOKING FORWARD. STB'D SIDE SIMILAR TO OPPOSITE HAND.

3- LIGHTENING & ACCESS HOLES TO BE CENTERED IN PANEL UNLESS OTHERWISE NOTED.

4- WELDING TO BE AS FOLLOWS:

a) WHERE STRINGERS OR LONG.LS PASS THROUGH SLOTTED WEB FRAMES, THERE IS TO BE A MATCHED PAIR OF INTERMITTENT WELDS ON EACH SIDE OF EACH INTERSECTION. ALL UNBRACKETED STIFFENERS SHALL HAVE DOUBLE CONTINUOUS WELD FOR 1/10 OF THEIR LENGTH.

b) TRANSVERSE WEB FRAME BOUNDARY CONNECTION TO BE 5/16" 3-8 (DOUBLE INTERMITTENT) OR 1/4" (DOUBLE CONTINUOUS) ALL AROUND. (YARD OPTION). EXCEPT AS FOLLOWS:
TO INNER BOTTOM 3/8" (DOUBLE CONTINUOUS).
LAPPED CONNECTION 5/16" (SINGLE CONTINUOUS) ALL AROUND.

c) ALL OTHER WELDING TO BE 5/16" 3-8 (DOUBLE INTERMITTENT) OR 1/4" (DOUBLE CONTINUOUS. (YARD OPTION)

REFERENCE PLANS

NO.	PLAN NO.	TITLE
11	129-99-9	ATTACHMENT OF LONG. BHD. CLOSING PL.
10	-129-03-13	LONG'L BHD. TRANS WEBS BEL. 2ND DK & BHDS FRS-64-78
9		
8		
7	-129-05-3	SHELL EXPANSION FWD FR. 220
6	-129-05-2	SHELL EXPANSION FRS. 64-220
5	-129-03-27	LONG'L BHD. & WEBS ABV. 2ND DK., 2ND DK. PL. ETC. FRS. 198-228
4		
3	H4639-129-03-21	LONG'L BHD UNIT #78 FRS. 191-206
2	STD-129-00-2	PLATE EDGE DETAILS FOR STD. WELD
1	STD-129-00-1	STRUCTURAL DETAILS

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 24 MARCH 1971
DRAWN RJC/ce APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639-129-03-22 ALT. NO. 6'

LONGITUDINAL BULKHEAD
UNITS 79
FRAMES #207 TO 220 INCL.

APPROVAL LETTERS

HULL APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	4-22-71				
A.B.S.	5-18-71				
U.S.C.G.	5-12-71	12.4-72			
LLOYD'S R.S.					
U.S.P.H.S.					

OPTICAL DETAIL MARK.
6-15-71
8-31-72
11-19-73

DATE OF ISSUE

ALTERATION	2	2	2	3	4	5	6	6'
ENGINEERING DISTRIBUTION	3/23/71	3/24/71	6/22/71	8/3/71	9/27/71	5/22/72	11/6/72	12/11/73
MAIL: OWNERS & INSP.	2	5		3	3	5	3	
AMERICAN BUREAU		3		3	3	3	3	
LLOYD'S R.S.								
U.S.M.A. & INSP.			2	2	2	2	2	
U.S. NAVY								
U.S.C.G.		3		3	3	3	3	
JOINER CONT'R.								
INSPECTION: OWNER'S INSP.			1	1	1			1
AM. BU. INSP.			1	1	1	1	1	
LLOYD'S INSP.								
U.S.M.A. INSP.								
U.S. NAVY INSP.								
U.S.C.G. INSP.			1	1	1	1	1	
OFFICE: HULL DRAFT.-21		10	1	1	1	1	1	1
MACH. DRAFT.-22			1	1	1	1	1	
ELEC. DRAFT.-23			1	1	1	1	1	
OUTFIT. DRAFT.-25								
ESTIMATING								
CDSompob			1	1	1	1	1	
MISC.: PRODUCTION (SCD)								
ORDER DEPT.								
JOINER CONT. YARD								
TOTAL ENG'R. DIST.	2	12	9	8	18	19	17	2
YARD DISTRIBUTION	7/7/71	8/4/71	9/30/71	9/30/71	5/24/72	11/7/72	12/17/73	
YARD: PLAN'G	1	1	1	1	1	1	1	
A. J. DALBY	3	3	3	3	3	3	3	
PIECE RATE-11	1	1	1	1	1	1	1	
TEST DEPARTMENT								
STEEL PLANNING								
STRUCTURAL: GROUND ASSEMBLY	8	8	8	8	4	4	4	
15 DEPT.	4	4	4	4	2	2	2	
NO. WAY								
NO. WAY								
NO. WAY								
NO. WAY								
STRUCT. SUPER.	2	2	2	2	2	2	2	
OPTICAL DETAIL-45	2	2	2	2	2	2	2	
WET DOCK								
MACH'Y & OUTFIT.: PIPE SHOP-52								
OUTFIT. #1 PIER								
PIPE DRAFT.-52	2	2	2	2	2	2	2	
BOILER SHOP-58								
OUTSIDE MACH.-60	2	2	2	2	1	1	1	
ELECTRIC SHOP-70								
SHEET MET. SHOP-74	3	3	3	3	2	2	2	
COPPER SHOP-51								
PAINT SHOP-75	1	1	1	1	1	1	1	
OTHER: WELDING	1	1	1	1	1	1	1	
MOLD LOFT-41	1	1	1	1	1	1	1	
BRACKET SHOP								
ORDER DEPT.	1	1	1	1	1	1	1	
TOTAL YARD DIST.	36	34	34	32	24	24	24	

4639, 40-ALT. 5E
4639, 40-ALT. 6
4640-ALT. 6'

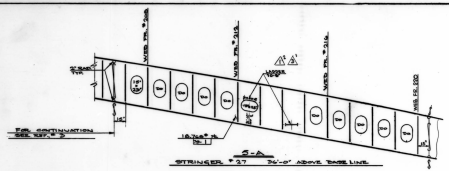
H-64
40 SQ.FT.

H4639-129-03-22

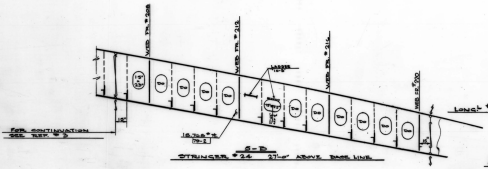
-3-
-2-

H-4639-129-03-22
ALT. 6
H-64

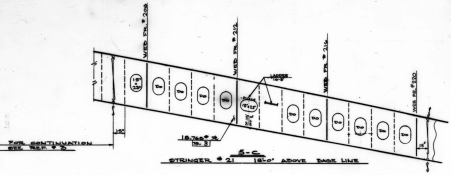
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



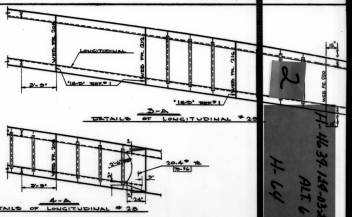
B-A



B-B



B-C

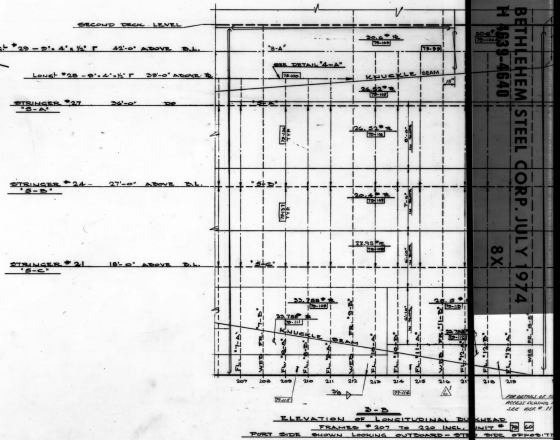


D-A

DETAILS OF LONGITUDINAL * 29

D-A

DETAILS OF LONGITUDINAL * 28



D-D

ELEVATION OF LONGITUDINAL BULKHEAD
FRAMES * 107 TO 220 INCL. *

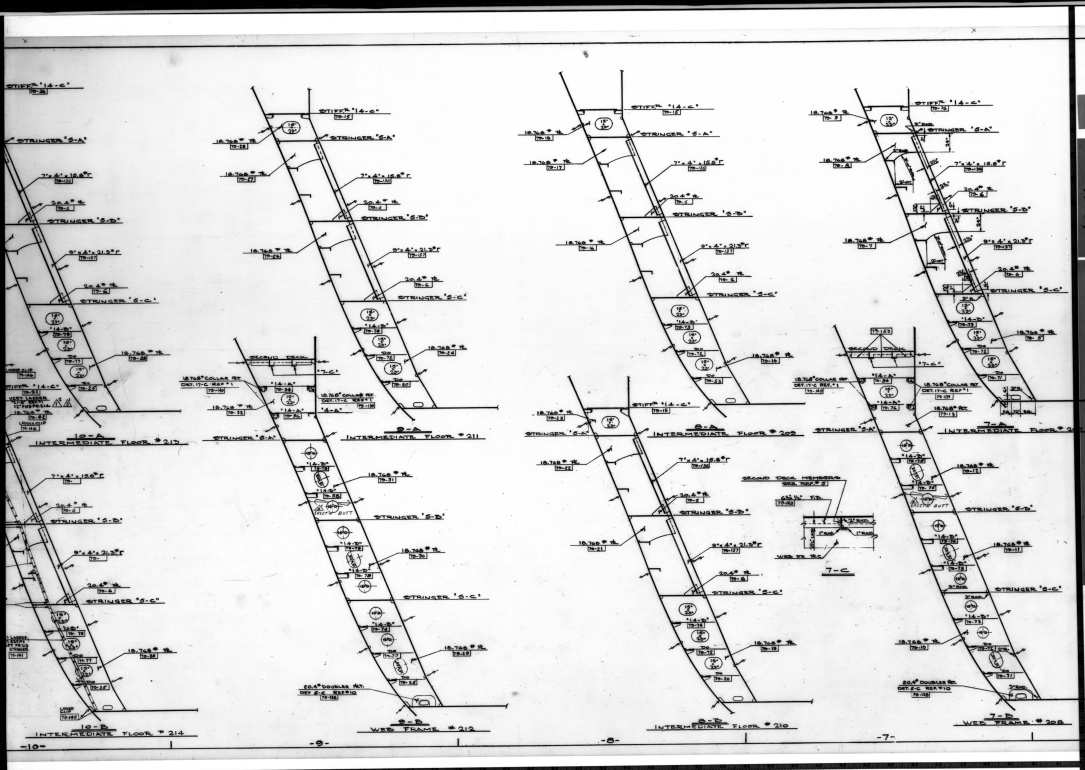
PORT SIDE SHOWN LOOKING OUTBOARD * STBD. SIDE OPPOSITE

2

HT-46 39.149-032-
ALT 6
H 69

BETHLEHEM STEEL CORP. JULY 1974
H 1839-4640
8X

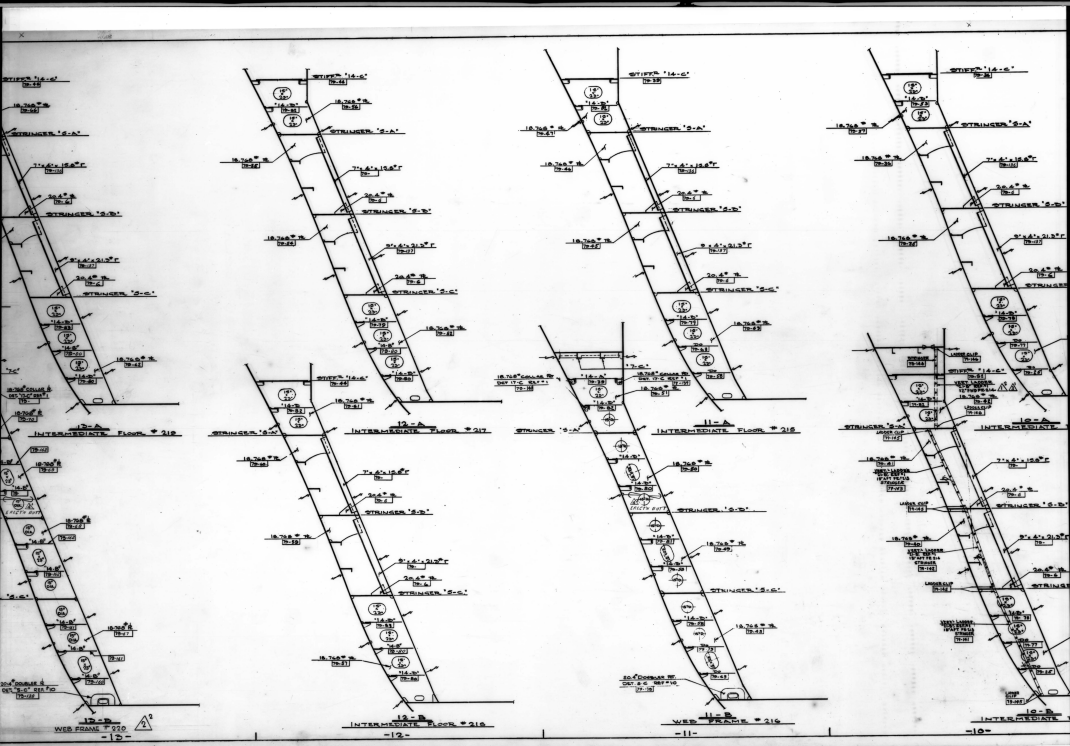
-6- -5- -4- -3-



3

H-39.1.49-03-22
ALT. 6
H-64

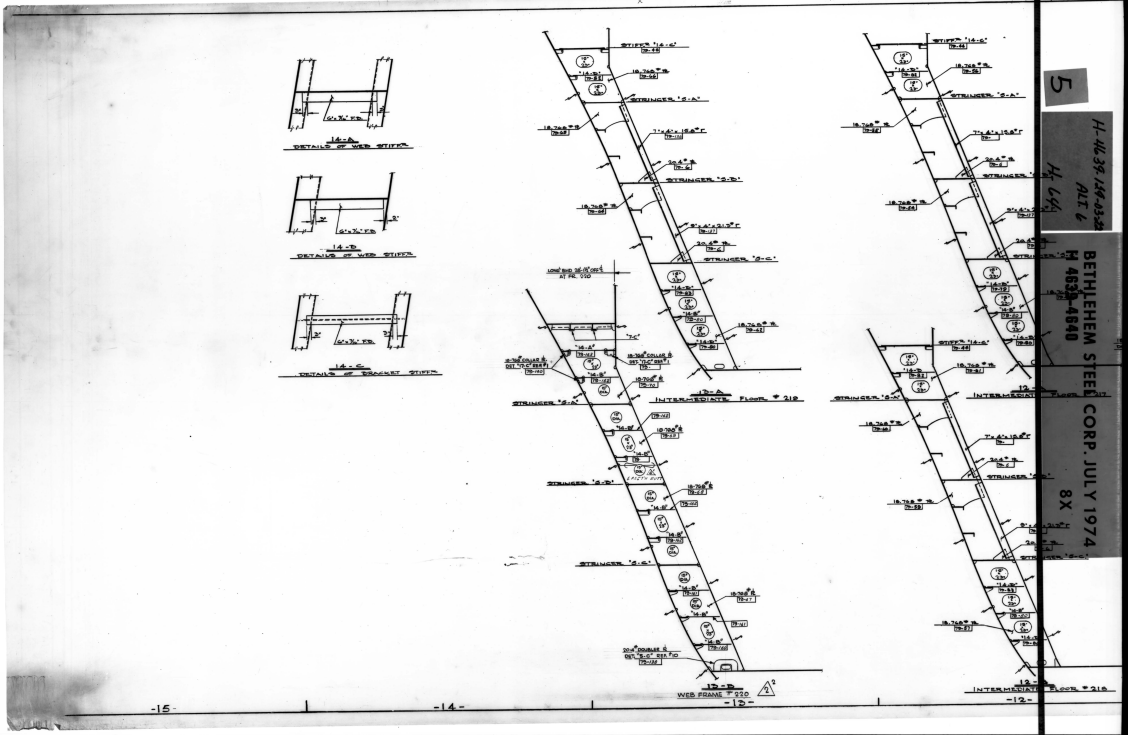
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



4

H-4639.1.59-03.22
ALT. 6
H-64

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



5

H-46.39.1.49-03-22
ALT. 6
H-64

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

BILL OF MATERIAL ~ FOR ONE SHIP

NO.	ITEM MARK	DESCRIPTION	MATERIAL SPEC. NO.	MATERIAL GRADE OR CLASS	REMARKS	REQ'D SHP	REQ'D SPR
1		4	18"x 1/2" B.P.N.I.L.	A.S.T.M. A36	SEE SEC. & TYP. MATERIAL	2,754	

"B-B"
SECTION AT SS. 55
LOOKING FORWARD
FOR DETAILS NOT SHOWN SEE "A-A"

"A-A"
SECTION AT SS. 57
LOOKING FORWARD
FOR DETAILS NOT SHOWN SEE "A-A"

FOR STRUCTURE BELOW 2nd REF. D.

GENERAL NOTES

1. FRAME SPACING 30".
2. ALL F'WD & AFT DIMENSIONS GIVEN FROM SEAMS LINE.
3. ALL WELDS TO BE 5/16" DBL. CONT. UNLESS OTHERWISE NOTED. LONG'L'S F.B.-35 MILL TO HAVE 3/8" DBL. CONT. IT EACH SIDE OF WEB.
4. UNDERSIDE OF DECK② IS ON MOLDED LINE. MOLDED LINE OR WEB REAMED 15 IN AFT SIDE - THICKNESS FORWARD.
5. UPPER DECK OUTBOARD MOST LONG'L TO BE WELDED 9/16 DBL. CONT. OTHER DECK LONGI'S TO BE WELDED 5/16 DBL. WITH A MATCHED PAIR OF WELDS (5/8") AT EACH SIDE OF TRANSVERSES.
6. ALL BUTT WELDS TO BE IN ACCORDANCE WITH RSR 7.

UAO-87/07

NO.	PLAN NO.	TITLE
14	H4639-149-1	DOOR ARCHHOUSE
13	8	DS-3 UPPER DECK PLTG. FRS 15-168
12	8	DS-3 2ND DECK PLTG. FRS 54-168
11		DS-3 STRUCTURAL DETAILS FOR 2ND DK. HEADS
10		DS-3 2ND DECK BOSS OPENG'S FOR PIPE HOLD
9	H4639-20-1	DS-4 FLOOR PLTG.
8	STD 164-0001	DS-4 DECK MACHINERY - SKIDDED TYPE
7	8	DS-4 TRANS. DK'S. STD'D. DS
6		DS-38 WEB FRS. 44 AR 49 SS. (LOOP) TO MACH. SPACE
5	8	DS-38 MODEL BOW TRANSVERSE BULKHEAD
4		DS-5 SHELL EXPANSION PLTG. FOR 8
3	H4639-20-1	DS-5 SHELL EXPANSION PLTG. FOR 8A
2	STD 5.19-001-1	DS-5 PLATE EDGE DETAIL FOR ASSEMBLY BUTT WELDS
1	STD 5.19-001-1	STRUCTURAL DETAILS

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ITEM	DESCRIPTION	WORK BY	APPD.
1	7/25/79	4	1) REPLACED 1/2" DOOR WITH 5/8" ARCHWAY AT BHD. F2 & 6. 2) DELETED 10" BEL. STIFF. @ CH. 1 BHD.	B	[illegible]
2	8/1/79	4	1) REV. DET. "B" TO INCL. W.T. DOOR. 2) LIEU OF ARCHWAY AT BHD. 6A. REINSTATED DETS. "A-1", "A-2" & "A-3". 3) ADDED DETS. "A-4", "B-1", "B-2" & "B-3". 4) 7/31/79 DATE	B	[illegible]
3		7	1) INSERT 6 INCHES IN 7"A. UPPER DUB. 5" PWD FR. BHD. 5+500 2) ADDING 9 SHIMS TO UPPER BUTT WELDS 37" AT.	B	[illegible]

4640	PACIFIC FAR EAST LINE, INC.	4640	
NO SB	PACIFIC FAR EAST LINE, INC.	4640	
HULL	DESIGN	CHANGE	

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SHIPYARD PLANT, NO. 22039

SCALE 3/4"=1'-0" DATE [illegible] 1974
DRAWN [illegible] APPROVED
TRACED APPROVED
CHECKED APPROVED [illegible]

PLAN NO. H-4639-129-DS-13 ALT. NO. 02

LONG'L BHD & TRAN'L WEBS
ABOVE 2ND DECK, 2ND DECK & UPPER
DECK PLTG. FRS 54-79

UNIT NOS 120, 121 & 122

APPROVAL LETTERS

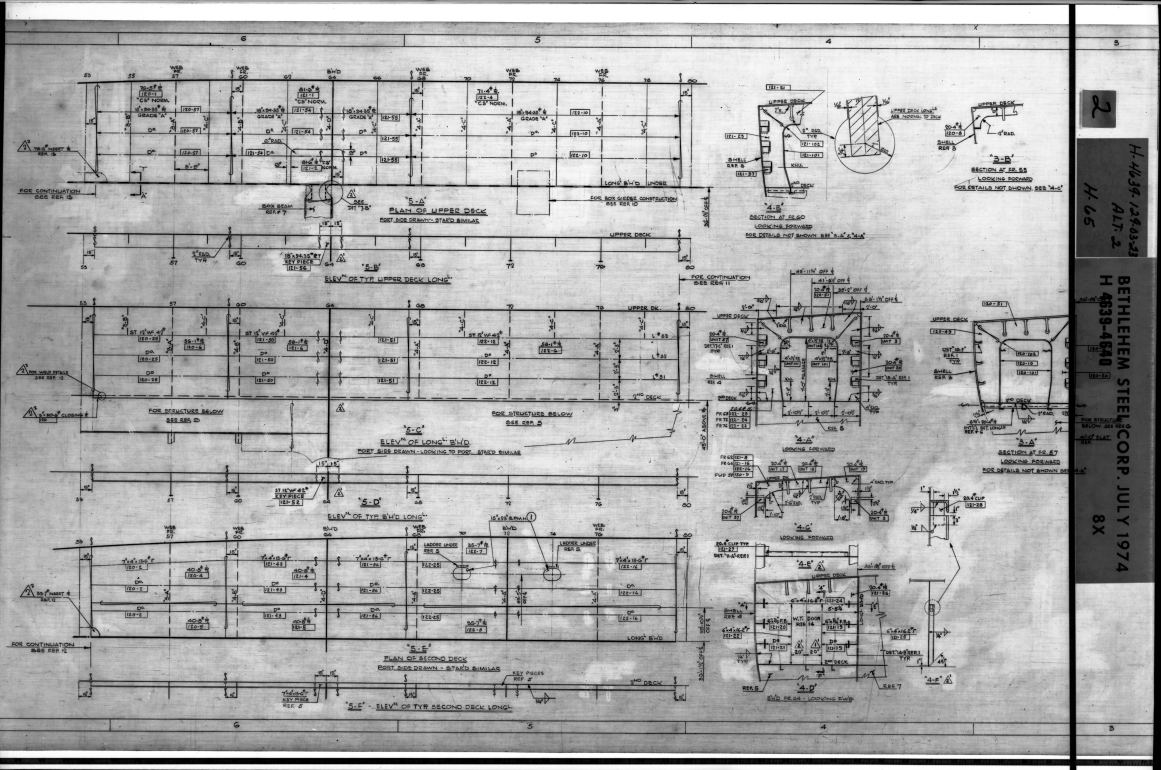
	APPROVED BY	DATE	DATE	SIZE	DATE
HULL	[illegible]				
OWNERS	[illegible]				
A.B.S.	[illegible]				
U.S.C.G.	[illegible]				
LLOYD'S REG.					
DE.P.R.R.					

DC NO'S ISSUED
3-11-21
8-1-79
7-27-81

H-65

20 SHEETS

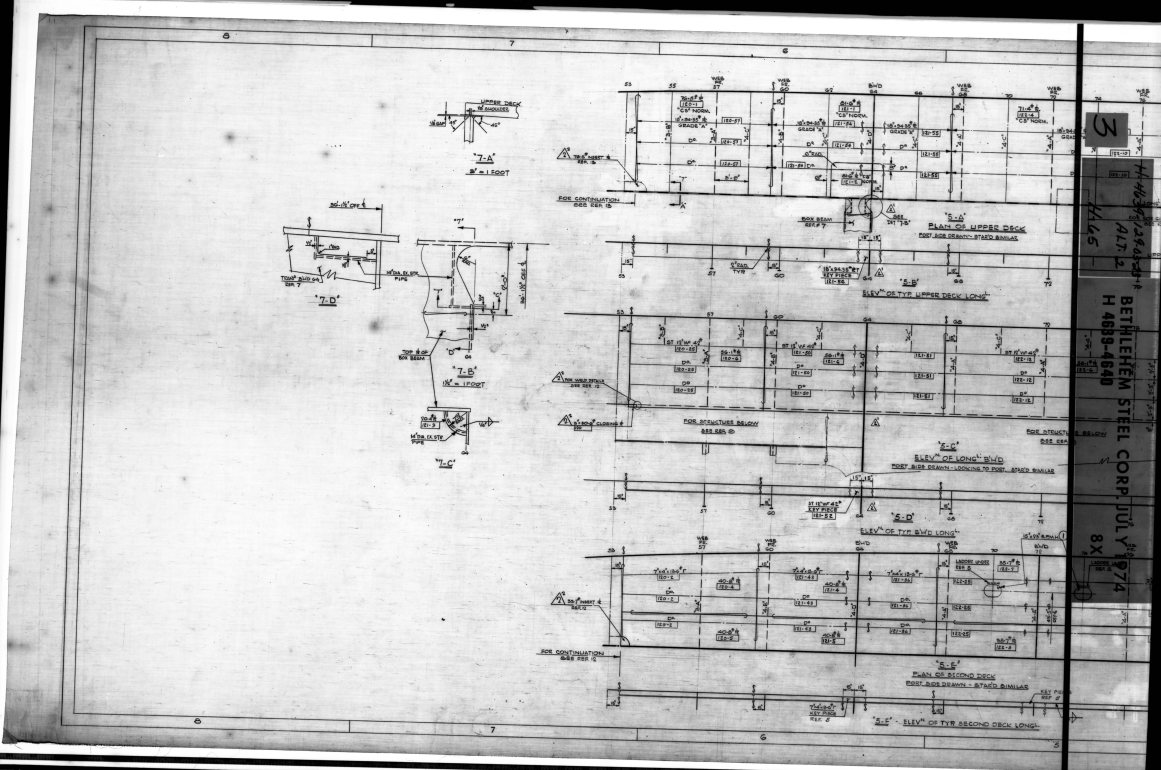
H-4639-129-DS-13 ALT. 2 H 65
BETHLEHEM STEEL CORP. JULY 1974 H 4639-4640 8X
1

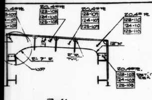


2

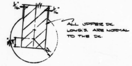
H-4639-128-03-23
ALT. 2
H 65

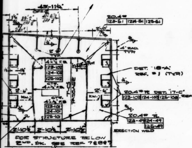
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X


"7-A"
B" = 1 FOOT
"7-B"
1/4" = 1 FOOT
"7-C"
"7-D"
"S-A"
PLAN OF UPPER DECK
"S-B"
ELEV" OF TYP UPPER DECK LONG"
"S-C"
ELEV" OF LONG" BWD
"S-D"
ELEV" OF TYP BWD LONG"
"S-E"
PLAN OF SECOND DECK
"S-F" - ELEV" OF TYP SECOND DECK LONG"
BETHLEHEM STEEL CORP. JULY 1974
H 4659-4640
8X
3



3-A
TYP. CHOCKS
@5'-0" BET. WEB FR.





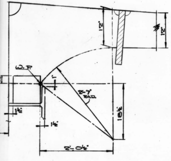
3-B
(LOOKING AFT)

Bill Of Material - 2 Per Ship

REV.	ITEM	QUAN	Description	Material	Mat'l Spec.	Patt. or Sym. #	Remarks	# Req.	Job #
	1	6	15x23 B.P.M.H.	—			SEE REF. 15 FOR MT'L. & DETAILS	UAO 3946	
4'	2	8	¾" DIA HEX HD BOLTS x 1½" LONG	STAINLESS ST.				39912-A	
4'	3	8	¾" DIA. LOCK WASHER	↓			FOR ITEM 2	39912-A	

General Notes

1) FRAME SPACING 30"
2) ALL FWD. & AFT. DIMENSIONS GIVEN FROM FRAME LINE.
3) PORT SIDE SHOWN LOOKING OUTB'D, STB'D SIMILAR TO OPPOSITE HAND.
4) ALL WELDS TO BE 5/16" DBL. CONT. EXCEPT WHERE NOTED. L# 21, 22 & 23 TO HAVE 3/8" DBL. CONT. 12" EACH SIDE OF WEBS.
5) DETAILS NOT NOTED TO BE IN ACCORDANCE WITH REF. # 1 & REF. # 2
6) UNDERSIDE OF DECKS IS ON MOLDED LINE. MOLDED LINE OF WEBS IS ON FWD. SIDE OF FRAMES FWD. OF MIDSHIPS & AFT SIDE AFT. OF MIDSHIP. FR. 139 IS MIDSHIPS. THICKNESS FORWARD.
7) ALL UPPER DK. LONG'S ARE NORMAL TO THE DECK.
8) UPPER DK. OUTB'D. MOST LONG'S TO BE WELDED 5/16 DBL. CONT. OTHER DK. LONG'L'S. WELDED 5/16 3-10 WITH A MATCHED PAIR OF WELDS 3" LG. AT EACH SIDE OF TRANSVERSES.
9) ALL DECK BUTTS IN ACCORDANCE WITH REF. # 2 - TYPE "T".



DET. "3-D"

Alterations

No.	Date	Zone	Description	Made By	App'd
			THIS PLAN IS A DUPLICATE OF PLAN NO. H4622-129-03-24 REV. 2' PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS:		
1	9/1/70		1) LONG'L'S ON UPPER DECK HAVE BEEN RE-ARRANGED & DETAILS CHANGED TO SUIT	LB	
2	11/25/70	4	1) WEBS BETWEEN UPPER & 2ND DECK REPOSITIONED TO LINE UP WITH SIDE PLATES OF BOX GIRDER AT BHD. FR. # 108	LB	USCG 3-4-71
	12/10/70	4,5 C	2) IN "5-B" DELETED SEAM IN UPPER DK. PLTG. (40'-10" OFF ℄)	P.K.	
3	3/3/71	4	1) INSERT PLT. AT 2ND DECK SHOWN SLOTTED THRU LONGL. BHD. TO FORM CONNECTION WITH BOX GIRDER AT FR. # 108. AND DETS. "8-A", "8-B" & "8-C" ADDED. ALL TO SUIT DEPARTURE # 022	LWB	OWNER 3-30-71 ABS
4	4/26/72	7,8	1/ DETAILS OF BAFFLE UNDER 2ND. DECK, IN WAY OF STAB. TANK VENT PIPE ADDED. SEE NEW DETS. "8-D" THRU' "8-H" & "7-A". ITEMS 2 & 3 ADDED TO BM.	R.J.L.	4.27.72 ABS USCG

Hull	Design	Charge
4640		4639
4639		4639

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD 21219

SCALE 3/8"=1'-0" & NOTED DATE 19 OCTOBER 1970
DRAWN LB APPROVED
TRACED APPROVED
CHECKED R APPROVED

PLAN NO. H-4639-129-03-24 ALT. NO. 4'

LONG L BHD. & TRANS WEBS ABOVE 2ND DK., 2ND DK & UPPER DK. PLATING FRS 80-115

Approval Letters

Hull Approved By	Date	Date	Date	Date	Date
OWNERS	11-4-70				
A.B.S.	1-8-71	2-25-71			
U.S.C.G.	11-30-70				
LLOYD'S R.S.					
U.S.P.H.S.					

Reference Plans

No.	Plan No.	Title
20	H-4639-129-03-26	LONGL. BHD. & TRANS. WEBS ABOVE 2ND DECK, 2ND DECK & UPPER DK. PLATING FRS. # 164 - # 190
19	H-4639-129-03-39	TRANS. BOX WEB FR. 115, 126, 137, 160, 172 & 176
18	H-4639-129-02-9	UPPER DK. HATCH COAMINGS # 3 HOLD
17	H-4639-129-03-23	LONG L BHD. & TRANS. WEBS ABOVE 2ND DK., 2ND DK. & UPPER DK. PLATING 79-52
16	H-4639-129-03-25	LONG. L BHD. & TRANS. WEBS ABOVE 2ND DK., 2ND DK. & UPPER DK. PLATING 116-162
15	STD 144-00-1	MANHOLE BOLTED TYPE
14	H-4639-142-1	ARRGT. & DETS. OF UPPER DK. CARGO HATCH COVERS # 3 HOLD
13	H-4639-129-05-2	SHELL EXPANSION FR. # 64-220
12	H-4639-129-03-41	TRANS BOX GIRDER IN Nº 4. HOLD
11	H-4639-129-03-42	TRANS BOX GIRDER IN Nº 5. HOLD
10	H-4639-129-03-38	TRANS. BOX WEB FR. 76, 88, 100
9	H-4639-129-03-16	LONG L BHD., TRANS. WEBS & WING BHD. BELOW 2ND DK.
8	H-4639-129-03-15	LONG. L BHD., TRANS. WEB BELOW 2ND DK.
7	H-4639-129-03-14	LONG L BHD., TRANS WEBS BELOW 2ND DK.
6	H-4639-129-03-5	INNERBOTTOM GIRDERS FR. # 64-110
5	H-4639-129-03-4	INNERBOTTOM FLOOR FR. # 64-110
4	H-4639-129-02-10	UPPER DK. HATCH COAMINGS # 4 HOLD
3	H-4639-129-01-1	TRANS W.T. BHD. # 112 & # 172
2	STD 129-00-2	PLATE EDGE DETS. FOR STD. BUTT WELDS
1	STD. 129-00-1	STRUCTURAL DETAILS

O.D. MRKS.	
3-2-71	6-27-72
5-14-71	
6-5-72	

Date of Issue

ALTERATION	1'	1'	2'	3'	3'	4	4'	
ENGINEERING DISTRIBUTION	10/17/70	12/21/70	1/13/71	3/23/71	3/24/71	5/17/72	6/1/72	6/30/72
OWNERS & INSP.	3		3	2	5	3		
AMERICAN BUREAU	3		3		3	3		
LLOYD'S R.S.								
U.S.M.A. & INSP.			2			2		
U S NAVY								
U.S.C.G.	3		3		3	3		
JOINER CONT'R.								
PFERSACK	3P							
OWNER'S INSP.			1		1	1	1	
AM. BU. INSP.			1		1	1		
LLOYD'S INSP.								
U.S.M.A. INSP.								
U.S. NAVY INSP.								
U.S.C.G. INSP.			1		1	1		
HULL DRAFT. - 21	1P	1		1	1	1	1	1
MACH. DRAFT. - 22	1P	1			1	1		
ELEC. DRAFT. - 23	1P	1			1	1		
OUTFIT. DRAFT. - 25								
ESTIMATING								
C.D. SCHAUB			1		1	1		
PRODUCTION (SCD)								
ORDER DEPT.								
JOINER CONT. YARD								
TOTAL ENG'R. DIST.	11	3	18	2	12	7	17	21
YARD DISTRIBUTION	10/21/70	1/25/71	5/17/71	5/12/72	6/12/72	7/5/72		
GPM								
PIECE RATE - 11	1P	1	1	1	1	1		
TEST DEPARTMENT								
A.J. DALBY	1P	3	3	3	3	3		
PLANNING	1P	1	1	1	1	1		
GROUND ASSEMBLY		8	8	4	4	4		
35 DEPT.		4	4	2	2	2		
NO. WAY								
NO. WAY								
NO. WAY								
NO. WAY								
STRUCT. SUPER.		2	2	2	2	2		
OPTICAL DETAIL - 45	3P	1	1	1	2	2		
WET DOCK								
PIPE SHOP - 52								
OUTFIT. # 1 PIER								
PIPE DRAFT. - 82		1	2	2	2	2		
BOILER SHOP - 58								
OUTSIDE MACH. - 60		2	2	1	1	1		
Q-MAT'L		2	2	1	1	1		
ELECTRIC SHOP - 70								
SHEET MET. SHOP - 74		2	2	2	2	2		
COPPER SHOP - 51								
PAINT SHOP - 78		1	1	1	1	1		
WELDING		1	1	1	1	1		
COUNTERS		1	1	1	1	1		
MOLD LOFT - 41		1	1	1	1	1		
BRACKET SHOP								
ORDER DEPT.		1	1	1	1	1		
TOTAL YARD DIST.	1	6	32	34	25	[illegible]	[illegible]	

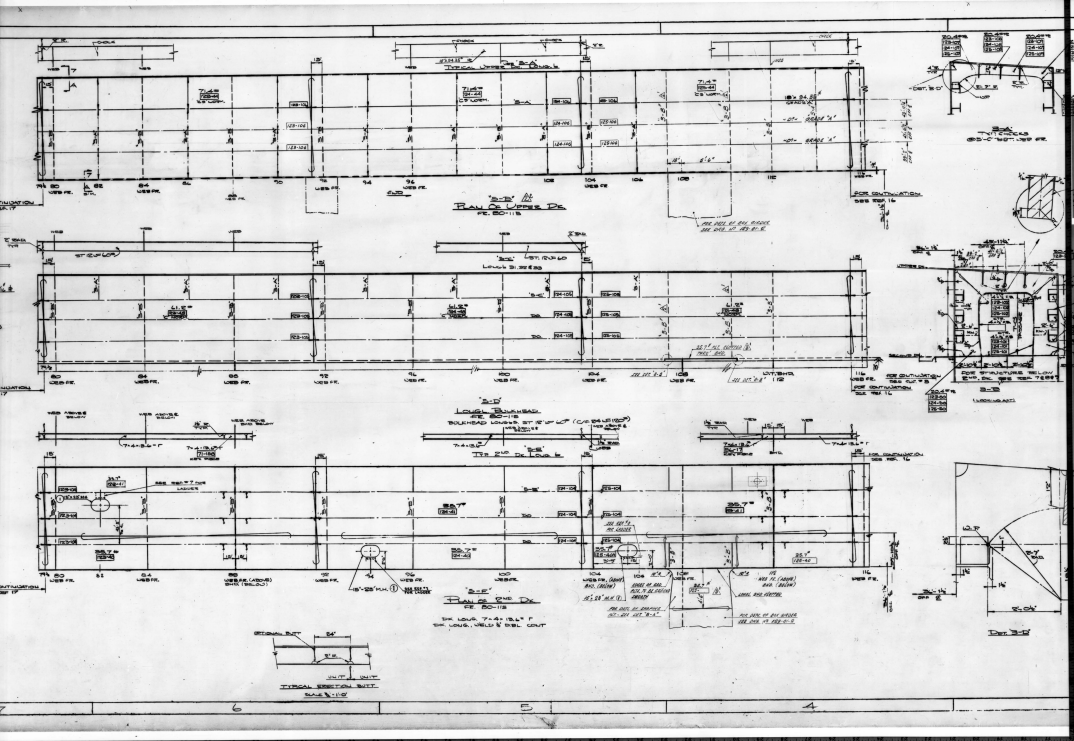
4639, 40 - ALT. 4' 4639, 40 - ALT. 4'

H-66 21.35 SQ.FT.

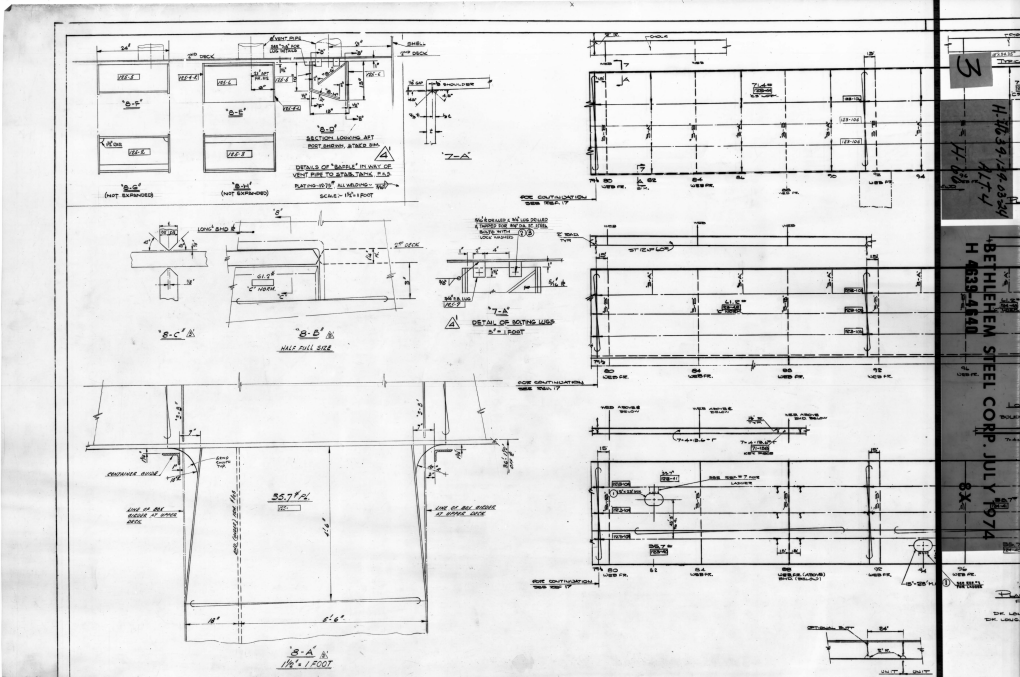
H-4639-129-03-24
ALT. 4
H-66

1

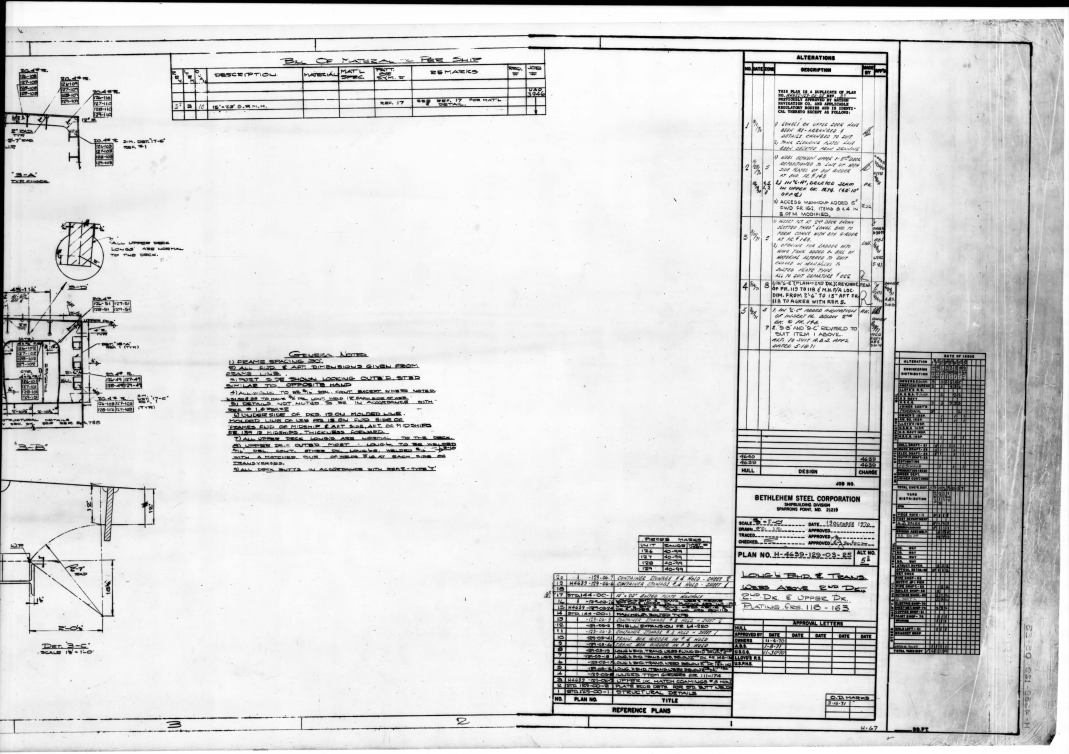
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



BETHLEHEM STEEL CORP. JULY 1974
H-4639-4640
8X
H-4639-124-03-24
ALT. 1
H-66
2
PLAN OF UPPER DK.
LOWER BULKHEAD
PLAN OF 2ND DK.
TYPICAL SECTION BUTT



BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
3
H-4639-124-08-24
ALT 4
H 68
SECTION LOOKING AFT
POST SHROUD, STAIR DIA.
DETAILS OF "BAFFLE" IN WAY OF VENT PIPE TO STAB. TANK F.A.S.
PLATING-10'-0" ALL WEIGHTS
SCALE:- 1½" = 1 FOOT
"8-F"
"8-G"
(NOT EXPANDED)
"8-H"
(NOT EXPANDED)
"8-D"
"8-C"
"8-B"
HALF FULL SIZE
"7-A"
DETAIL OF BOLTING LUGS
5" = 1 FOOT
FOR CONTINUATION SEE REF. 17
FOR CONTINUATION SEE REF. 17
FOR CONTINUATION SEE REF. 17
STIFFLOR
CONTAINER RIDGE
LINE OF BOX RIDGE AT UPPER DECK
LINE OF BOX RIDGE AT UPPER DECK
35.7# Pl.
"8-A"
1½" = 1 FOOT
TYPICAL SECTION SUIT
SCALE 1"=1'-0"
8
7
6



BILL OF MATERIAL & FREE ISSUE

ITEM	QTY	DESCRIPTION	MATERIAL	MATL SPEC	SIZE	REMARKS	WGHT EA	WGHT TOT
1	3	10						1727
2	3	10			18-12" O.H.H.	SEE SEC. 17 FOR MATL SPECS.		3456

GENERAL NOTES

1. FRAME SPACING 24'-0" @ ALL END & ART. DIMENSIONS GIVEN FROM FACE LINE.
2. FIRST & 2ND FRAME LOCKING OUTER STEP SHOWN TO OPPOSITE HAND.
3. ALL WALL TO WALL DIM. ARE FROM FACE TO FACE OF WALL & MAY VARY SLIGHTLY DUE TO VARIATIONS IN MASONRY CONSTRUCTION.
4. ALL STEEL TO BE PAINTED WITH ONE SHOP COAT RED OXIDE PAINT IN ACCORDANCE WITH SPEC. NO. 12 FRAMES.
5. UNLESS SIZE OF PIER IS ON FOUNDATION PLAN, SIZE OF FOUNDATION PIER SHALL BE AS SHOWN IN DETAIL 1 ON SHEET 2.
6. ALL WIDE FLANGE SHAPES ARE MEDIUM TO BE WELDED BY MEDIUM SHOP PAINT. WELDING TO BE MADE WITH E-70XX ELECTRODES.
7. ALL BOLTED CONNECTIONS TO BE MADE WITH A307 BOLTS.
8. ALL BOLTS IN ACCORDANCE WITH NEXT ITEM "I"

ALTERATIONS

NO.	DATE	DESCRIPTION	MADE BY	APP'D
		THIS PLAN IS A REVISION OF PLAN NO. H-4639-129-103-E5 DATED 10-15-74 AND IS SUPERSEDED. CHANGES IN DETAIL ARE INDICATED BY CLOUDING. REVISIONS MADE ON THIS SHEET ARE AS FOLLOWS:		
1	1/4	1) LEVEL IN DOOR OPEN. ADD ANGLE NO. 4 ABOVE DOOR OPEN.		
2	1/4	2) ADD WEIGHT OVER 1 STORY DESIGNATED 3 OUT OF BOX ON TOP SIDE OF BOX. FOR DET. SEE SHT. 2		
3	1/4	3) DET. 4, DELETE 3 SEAM WELDS OF BOX TO ANGLE		
4	1/4	4) ACCESS HARNESS ADDED TO FIND 94.60 ITEMS 2 & 4 & 8 OF M. MODIFIED.		
5	1/4	5) ADDED 3/4" DIA. HOLE IN BOTTOM OF DOOR FROM OUTER FACE LEVEL END TO FRAME CHUTE NOW BOX 4 HOLES AT 16 PLACES.		
6	1/4	6) ADDED 2 CLEATS WITH NUTS TACK WELDED & ALL BY WELDING ALREADY TO BOX ENTIRE W. INSTALLED IN PHOTO SHOWN FROM ALL IN ANY ADDITIONAL FEES		
7	1/4	7) 3/4"x 4" PLATE ADDED TO BOX PER M.I.D. TO USE 2 HOLES FROM 3'-6" TO 13'-8" AFT TO FIT TO MATCH WITH REV. 8.		
8	1/4	8) ADDED 2 1/2" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
9	1/4	9) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
10	1/4	10) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
11	1/4	11) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
12	1/4	12) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
13	1/4	13) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
14	1/4	14) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
15	1/4	15) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
16	1/4	16) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
17	1/4	17) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
18	1/4	18) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
19	1/4	19) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
20	1/4	20) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
21	1/4	21) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
22	1/4	22) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
23	1/4	23) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
24	1/4	24) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
25	1/4	25) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
26	1/4	26) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
27	1/4	27) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
28	1/4	28) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
29	1/4	29) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
30	1/4	30) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
31	1/4	31) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
32	1/4	32) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
33	1/4	33) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
34	1/4	34) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
35	1/4	35) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
36	1/4	36) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
37	1/4	37) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
38	1/4	38) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
39	1/4	39) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
40	1/4	40) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
41	1/4	41) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
42	1/4	42) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
43	1/4	43) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
44	1/4	44) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
45	1/4	45) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
46	1/4	46) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
47	1/4	47) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
48	1/4	48) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
49	1/4	49) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
50	1/4	50) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
51	1/4	51) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
52	1/4	52) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
53	1/4	53) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
54	1/4	54) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
55	1/4	55) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
56	1/4	56) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
57	1/4	57) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
58	1/4	58) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
59	1/4	59) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
60	1/4	60) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
61	1/4	61) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
62	1/4	62) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
63	1/4	63) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
64	1/4	64) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
65	1/4	65) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
66	1/4	66) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
67	1/4	67) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
68	1/4	68) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
69	1/4	69) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
70	1/4	70) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
71	1/4	71) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
72	1/4	72) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
73	1/4	73) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
74	1/4	74) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
75	1/4	75) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
76	1/4	76) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
77	1/4	77) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
78	1/4	78) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
79	1/4	79) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
80	1/4	80) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
81	1/4	81) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
82	1/4	82) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
83	1/4	83) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
84	1/4	84) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
85	1/4	85) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
86	1/4	86) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
87	1/4	87) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
88	1/4	88) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
89	1/4	89) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
90	1/4	90) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
91	1/4	91) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
92	1/4	92) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
93	1/4	93) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
94	1/4	94) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
95	1/4	95) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
96	1/4	96) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
97	1/4	97) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
98	1/4	98) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
99	1/4	99) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		
100	1/4	100) ADDED 3/4" DIA. HOLE IN BOTTOM OF BOX AT 2 PLACES		

MILL	DESIGN	CHANGE
4640	4639	
4640	4640	
MILL	DESIGN	CHANGE

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/4"=1'-0" DATE 10 October 1974
DRAWN [illegible] APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H-4639-129-103-E5 ALT NO. 5

LONG END & TRANS. LOWER ABOVE END DET. SHIP SIDE & UPPER DK. PLATING FRS 116 - 163

APPROVAL LETTERS				
FINAL				
APPROVED BY:	DATE	DATE	DATE	DATE
ENGRG.	10-8-74			
M.S.A.	10-8-74			
SHIPYARD	10-10-74			
SERVICES				
LETTER				

D.O. MARKS
7-12-74

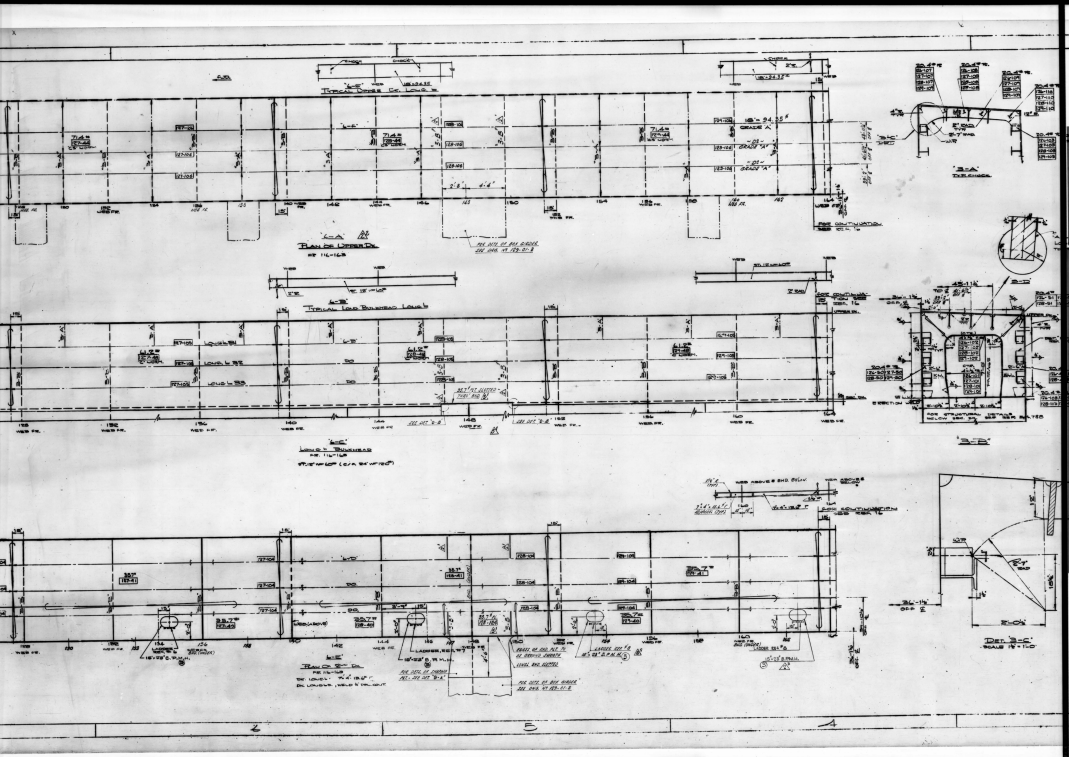
REFERENCE PLANS

PIECES MARKS	
124	40-MK
127	40-MK
128	40-MK
129	40-MK

H-67

99 FT

H-4639-129-103-E5 ALT 5
H-67
1
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



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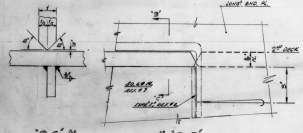
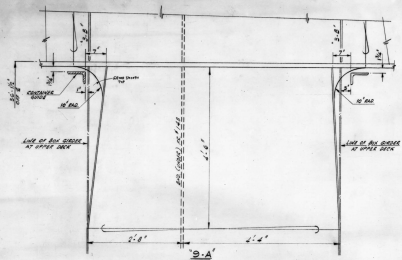
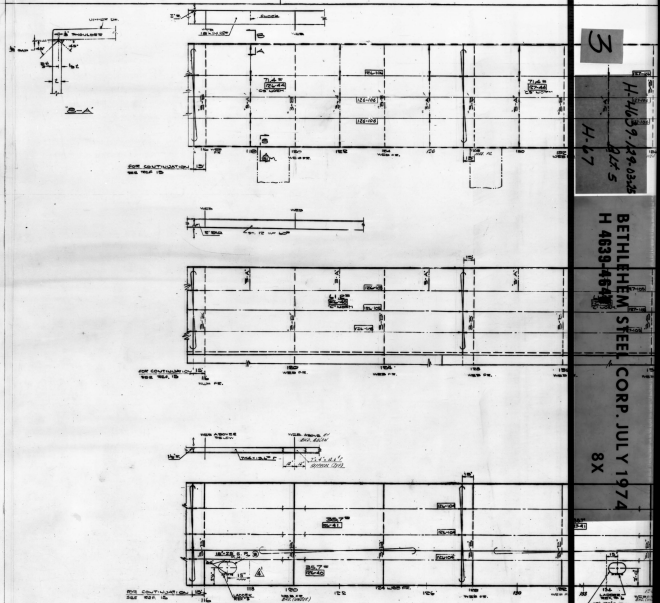
H-4639-129-03-25
ALT 5
H-67

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640

8X







BETHLEHEM STEEL CORP. JULY 1974
H 4039-4647
8X

H 4639-149-03-24
ALT 5
H 6D

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

1

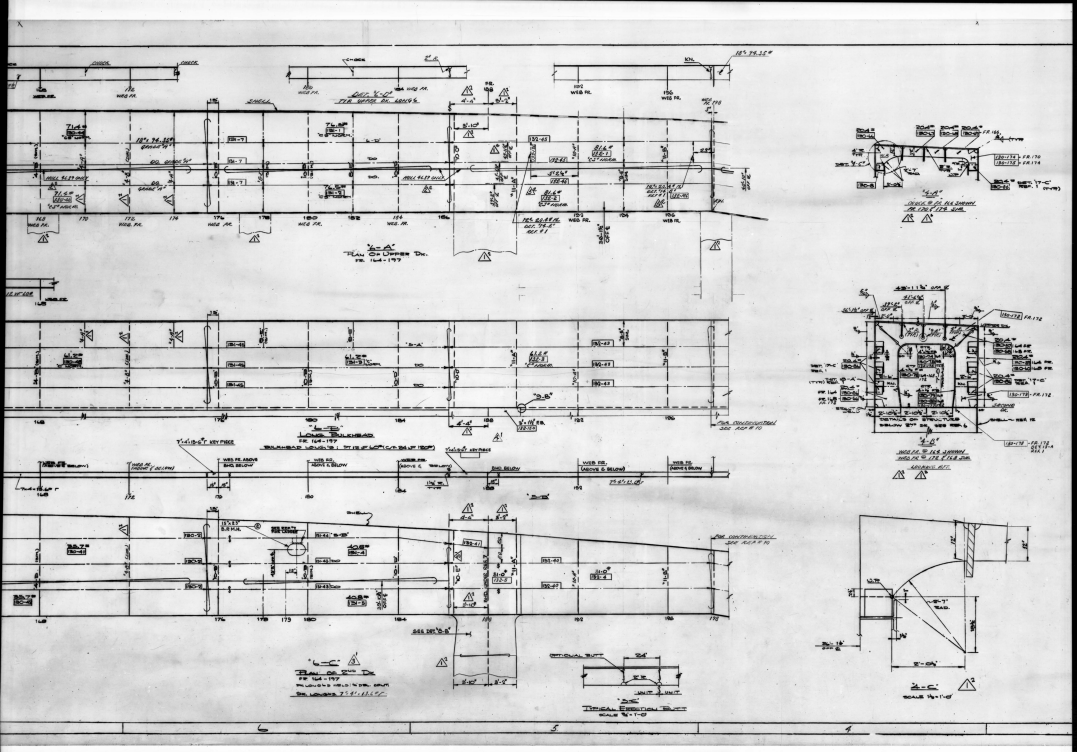
BILL OF MATERIAL FOR THIS SHIP

MK	NO. REQ'D	DESCRIPTION	MATERIAL SPEC.	WEIGHT EACH GROSS	WEIGHT EACH NET	REMARKS	WORK CTR	ITEM NO.
A								
A	2	16"-52# W.F. H.--				SEE SEA. 12 & SEA. 17 & DETAILS		
A								
A								

ALTERATIONS

NO.	MTG. DWG.	DESCRIPTION	MADE BY	APP'D
1	H-4639-149-03-24	1955 MAR 15		
2	H-4639-149-03-24	1955 MAY 31		
3	H-4639-149-03-24	1955 JUNE 30		
4	H-4639-149-03-24	1955 JULY 29		
5	H-4639-149-03-24	1955 AUG 31		

H-4639-149-03-24



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H 4636-4640
H 4636-4640-13-24
H 4636-4640-13-25
H 4636-4640-13-26
H 4636-4640-13-27
H 4636-4640-13-28
H 4636-4640-13-29
H 4636-4640-13-30
H 4636-4640-13-31
H 4636-4640-13-32
H 4636-4640-13-33
H 4636-4640-13-34
H 4636-4640-13-35
H 4636-4640-13-36
H 4636-4640-13-37
H 4636-4640-13-38
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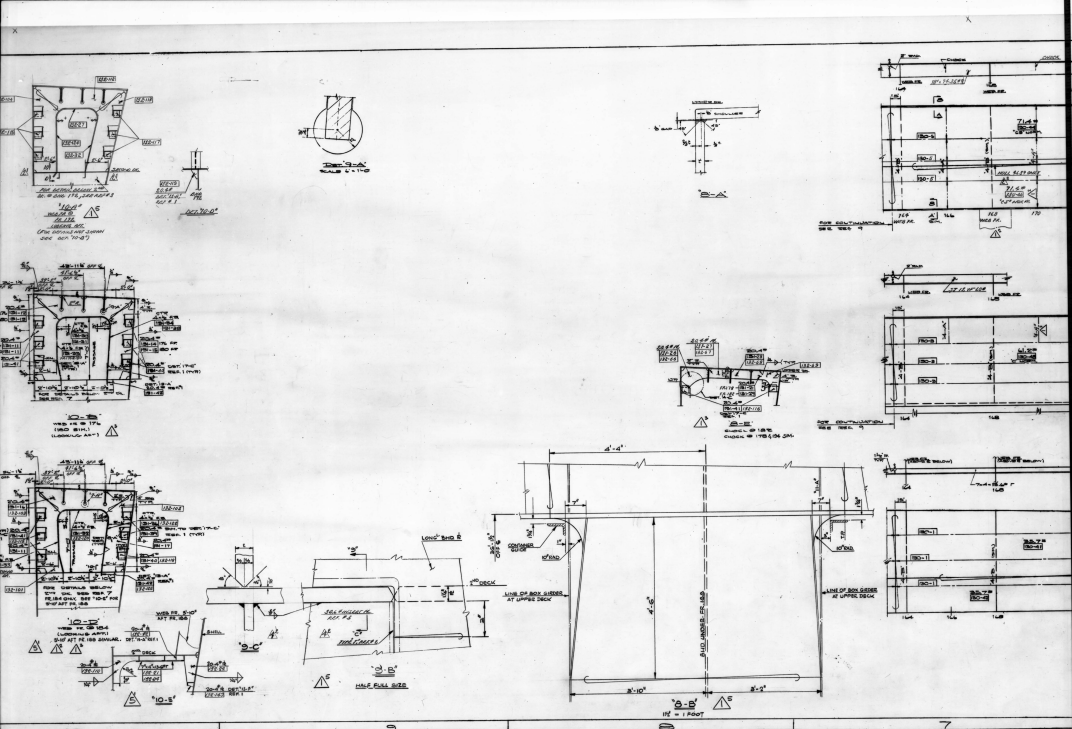
H 4636-4640-13-43
H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H 4639-1648
8X
3
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SCALE 1"=1'-0"
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SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
SECTION J-J
SECTION K-K
SECTION L-L
SECTION M-M
SECTION N-N
SECTION P-P
SECTION Q-Q
SECTION R-R
SECTION S-S
SECTION T-T
SECTION U-U
SECTION V-V
SECTION W-W
SECTION X-X
SECTION Y-Y
SECTION Z-Z
SECTION AA-AA
SECTION BB-BB
SECTION CC-CC
SECTION DD-DD
SECTION EE-EE
SECTION FF-FF
SECTION GG-GG
SECTION HH-HH
SECTION JJ-JJ
SECTION KK-KK
SECTION LL-LL
SECTION MM-MM
SECTION NN-NN
SECTION PP-PP
SECTION QQ-QQ
SECTION RR-RR
SECTION SS-SS
SECTION TT-TT
SECTION UU-UU
SECTION VV-VV
SECTION WW-WW
SECTION XX-XX
SECTION YY-YY
SECTION ZZ-ZZ
SECTION AAA-AAA
SECTION BBB-BBB
SECTION CCC-CCC
SECTION DDD-DDD
SECTION EEE-EEE
SECTION FFF-FFF
SECTION GGG-GGG
SECTION HHH-HHH
SECTION JJJ-JJJ
SECTION KKK-KKK
SECTION LLL-LLL
SECTION MMM-MMM
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SECTION QQQ-QQQ
SECTION RRR-RRR
SECTION SSS-SSS
SECTION TTT-TTT
SECTION UUU-UUU
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SECTION YYY-YYY
SECTION ZZZ-ZZZ
SECTION AAAA-AAAA
SECTION BBBB-BBBB
SECTION CCCC-CCCC
SECTION DDDD-DDDD
SECTION EEEE-EEEE
SECTION FFFF-FFFF
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SECTION HHHH-HHHH
SECTION JJJJ-JJJJ
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SECTION TTTT-TTTT
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SECTION FFFFF-FFFFF
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SECTION CCCCCCCCCCCCCCCCC-CCCCCCCCCCCCCCCCC
SECTION DDDDDDDDDDDDDDDDD-DDDDDDDDDDDDDDDDD
SECTION EEEEEEEEEEEEEEEEE-EEEEEEEEEEEEEEEEE
SECTION FFFFFFFFFFFFFFFFF-FFFFFFFFFFFFFFFFF
SECTION GGGGGGGGGGGGGGGGG-GGGGGGGGGGGGGGGGG
SECTION HHHHHHHHHHHHHHHHH-HHHHHHHHHHHHHHHHH
SECTION JJJJJJJJJJJJJJJJJ-JJJJJJJJJJJJJJJJJ
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SECTION MMMMMMMMMMMMMMMMM-MMMMMMMMMMMMMMMMM
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SECTION TTTTTTTTTTTTTTTTT-TTTTTTTTTTTTTTTTT
SECTION UUUUUUUUUUUUUUUUU-UUUUUUUUUUUUUUUUU
SECTION VVVVVVVVVVVVVVVVV-VVVVVVVVVVVVVVVVV
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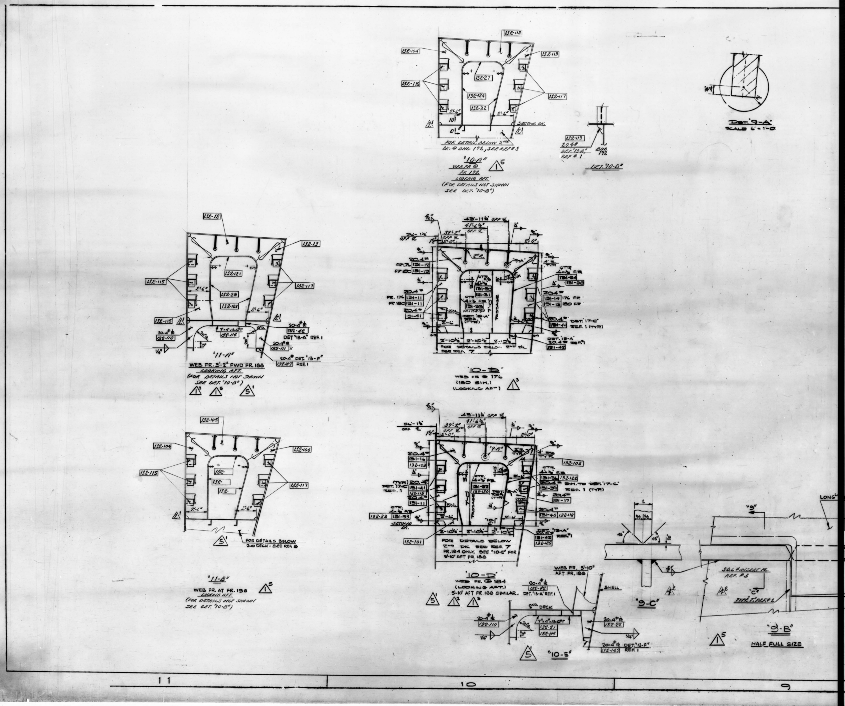
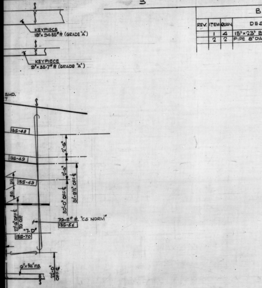


4

H-4639-129-03-26
ALT. 5
H-68

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

3 | 2 | 1

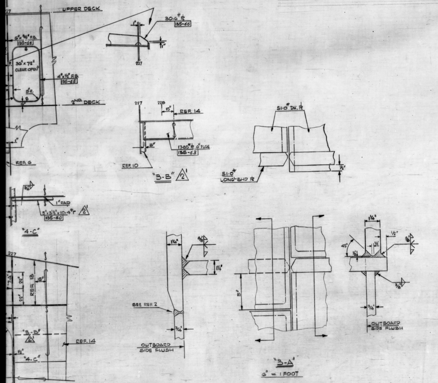


BILL OF MATERIAL ~ FOR ONE SHIP

REV.	ITEM	QUAN.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PATT. OR SYMB. No	REMARKS	REQN. No	JOB No
	1	4	15"x23" B.P.M.H.	AS NOTED			SEE REF. 3 FOR MATL. & DETAIL		
	2	2	PIPE 8" DIA. SCH. 80 x 12" LG	STEEL					

GENERAL NOTES:

1. FRAME SPACING 30".
2. UNDERSIDE OF DECKS IS MOLDED LINE. FWD. SIDE OF WEB FRS. IS MOLDED LINE
3. ALL WELDS TO BE 5/16" DBLE. CONT. UNLESS OTHERWISE NOTED. LONGL BHD. STIFFRS. TO HAVE 3/8" DBLE. CONT. WELD 12" EACH SIDE OF WEBS. OUT'BD MOST UPPER DK. LONGL TO BE WELDED 5/16" DBLE. CONT. OTHERS TO BE 5/16 3-10 WITH A MATCHED PAIR OF WELDS 3" LONG AT EACH SIDE OF TRANSVERSES.
4. ALL PLATE BUTTS IN ACCORDANCE WITH REF 2.
5. ALL SECTIONS DRAWN FOR PORT SIDE LOOKING FWD~STARD SIMILAR.



ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	5/20/71	7 8 9	1/ COMPENSATION PIECES ON WEB FRAMES RELOCATED ON UNDER-SIDE OF SHELL LONGLS.	R.J.C.	
	6/22/71	5	2) IN PLAN "5-E": RELOCATED 15"x23" BOLTED M.H. FROM 3'-9" TO 6'-0" FWD WEB FR. 212 PER 23 DEPT. REQUEST DATED 6-4-71.	F.E.W.	J USCG 8-4-71
		4	3 1/1 "5-G" ADDED BRK'T FWD FR. 218.	P.K.	NJY 7/1/71
		6,7 8,9	4 ADDED DET. "6-C", INDICATING FACE PL. SNIPES IN DETS "7-C", "7-K", "8-L", "8-H", "8-C", "9-A", "9-C", "9-D". ITEMS 3 & 4 TO SUIT OWNER'S APPV. DATED 5-11-71		
2	8/27/71	3 4	1/ DET. "4-C" MODIFIED, DET "3-B" & REF. PLAN # 14 ADDED, TO SUIT COMMENTS ON REF. PLAN 14, IN G.G.S. LETTER DATED 7/20/71	R.J.C.	NJY 9.13.71 J
3	10/12/71	10	1. IN DET. 10-B CHANGED DIMENSION OF TOP PL. OF CONTAINER FOUNDATION FROM 46'-1 3/16" ABV. CL TO 47'-4 3/16" ABV. CL. DEPARTURE #059	J.W.	NJY 10.18.71 J
4	4/18/72	4	1/ IN DET. "4-B" TAPERED FACE PL ADDED TO LONGL. B'HD STIFFRS.	R.J.C.	NJY 4.27.72
5	7/31/72	6	1 1/1 "5-B", ADDED PL. STIFFY 2'-4" AFT FR 200 (TO SUIT CONTAINER PEDESTALS)	P.K.	J
6	8/17/72	5	1. 1/1 "5-C", TAPERED FLG. OF ST 12" WF 60# TO 9", BETWEEN FR'S 206-208; ADDED "5-H" (Y15 73)	P.K.	J 8/23/72

ABS 9/30/71 USCG 10-13-71 · ABS 11-30-71 USCG 11-30-71 · ABS 5/11/72 USCG 4/13/72

REFERENCE PLANS

NO.	PLAN NO.	TITLE
14	02-4	2ND DECK PLATING FRS. 227-272
13	03-45	TRANSVERSE FRAMING FRS. 228-259
12	129-06-10	CONTAINER STOWAGE #2 HOLD
11	141-1	DOOR SCHEDULE
10	01-5	TRANS. W.T. BHD. #227
9	03-26	LONGL BHD & WEBS ABOVE 2ND DK. ETC. FRS. 164-197
8	03-21	LONGL BHD UNIT 78 FRS. 191-206
7	03-22	LONGL BHD UNIT 79, FRS. 207-220
6	03-46	LONGL B'H'D & WEBS BEL. 2ND DK. FRS 221-228.
5	05-3	SHELL EXPANSION FWD FR. 220
4	H4639-129-05-2	SHELL EXPANSION FRS. 64-220
3	144-00-5	15"x23" MANHOLE - BOLTED TYPE
2	.2	PLATE EDGE DETAILS FOR STANDARD BUTT WELDS
1	STD-129-00-1	STRUCTURAL DETAILS.

2' (item 14)

UAO-39446-N

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1 FOOT & AS NOTED DATE 13 APRIL 1971
DRAWN R.J.C. APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. H4639-129-03-27 ALT. NO. 6'

LONGL B'H'D & TRANS. WEBS ABOVE 2ND DECK
2ND DECK & UPPER DECK PLTG.
FRS. 198-228

APPROVAL LETTERS

HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-11-71	8-10-72			
A.B.S.	5-26-71	8-14-72			
U.S.C.G.	5-12-71	8-11-72	9-22-72		
LLOYD'S R.S.					
U.S.P.H.S.					

O.D. MARKS

7-13-71	8-17-72
8-27-71	10-16-72

H-69

DATE OF ISSUE

ALTERATION	
ENGINEERING DISTRIBUTION	
OWNERS/INSP.	5 9 3 3 3 5 4
AMERICAN BUREAU	3 3 3 3 3 9 3
LLOYD'S R.S.	
U.S.M.A./INSP	2 2 2 2 2 2
U.S. NAVY	
U.S.C.G.	3 3 3 3 3 3 3
JOINER CONT'R.	
PEPERSACK	2P
OWNER'S INSP.	1 1 1 1 1
AM. BU. INSP.	1 1 1 1 1
LLOYD'S INSP.	
U.S.M.A. INSP.	
U.S. NAVY INSP.	
U.S.C.G. INSP.	1 1 1 1 1
HULL DRAFT.-21	1P 1 1 1 1 1 1 1
MACH. DRAFT.-22	1P 1 1 1 1 1 1
ELEC. DRAFT.-23	1P 1 1 1 1 1 1
OUTFIT. DRAFT.-25	
ESTIMATING	
COSCHAUB	1 1 1 1 1 1
PRODUCTION (BCD)	
ORDER DEPT.	
JOINER CONT. YARD	
TOTAL ENG'R. DIST.	13 13 18 18 18 17 20 46 2
YARD DISTRIBUTION	
CPM	
PIECE RATE-11	1P 1 1 1 1 1 1 1
TEST DEPARTMENT	
A.J. DALBY	1P 3 3 3 3 3 3 3
PLANNING	1P 1 1 1 1 1 1 1
GROUND ASSEMBLY	8 8 8 4 4 4 4
35 DEPT.	4 4 4 2 2 2 2
NO. WAY	
NO. WAY	
NO. WAY	
NO. WAY	
STRUCT. SUPER.	2 2 2 2 2 2 2
OPTICAL DETAIL-45	2P 2 2 2 2 2 2 2
WET DOCK	
PIPE SHOP-52	
OUTFIT. #1 PIER	
PIPE DRAFT.-52	2 2 2 2 2 2 2
BOILER SHOP-58	
OUTSIDE MACH.-60	2 2 2 1 1 1 1
O-MATL	2 2 2 1 1 1 1
ELECTRIC SHOP-70	
SHEET MET. SHOP-74	
COPPER SHOP-81	
PAINT SHOP-75	1 1 1 1 1 1 1
WELDING	1 1 1 1 1 1 1
MOLD LOFT-41	1 1 1 1 1 1 1
BRACKET SHOP	
ORDER DEPT.	1 1 1 1 1 1 1
TOTAL YARD DIST.	[illegible]

ALT. 3' · ALT. 4' · 4639, 40 - ALT. 5' · 4639, 40 - ALT 6' · 4639, 40 - ALT. 6'

25 SQ.FT.

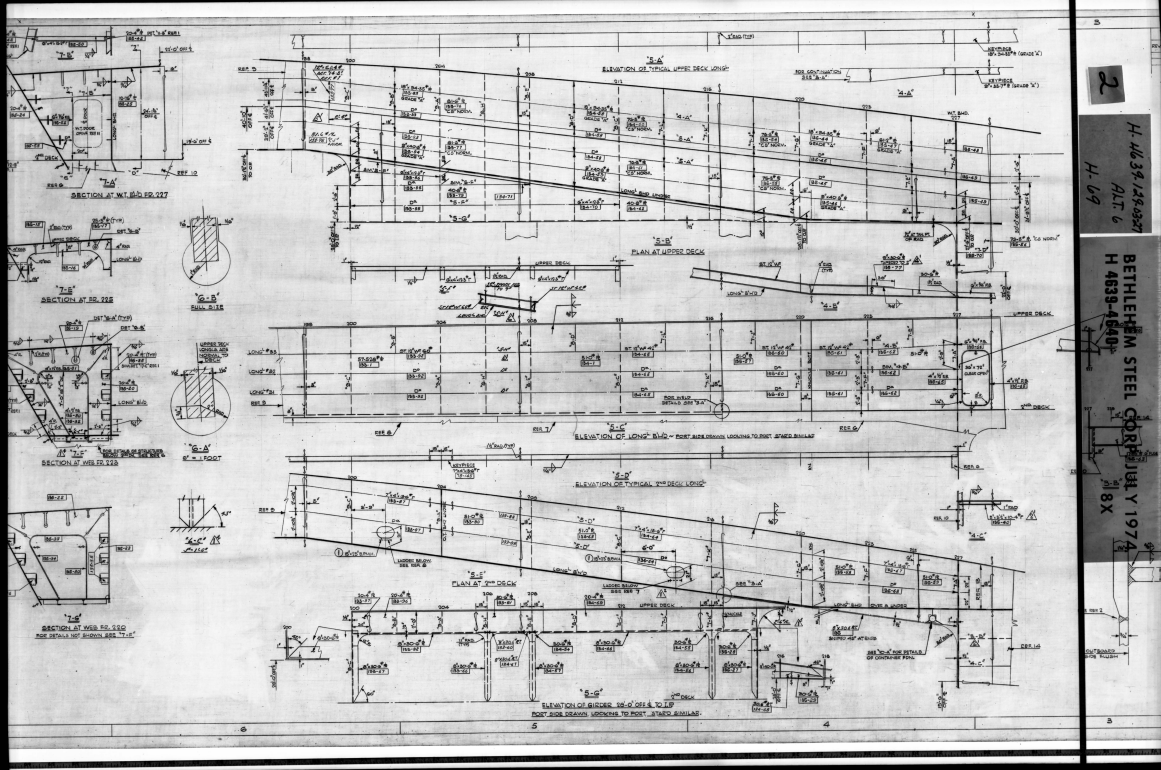
H4639-129-03-27

S2 00 J

1

H-4639-129-03-27
ALT. 6
H-69

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



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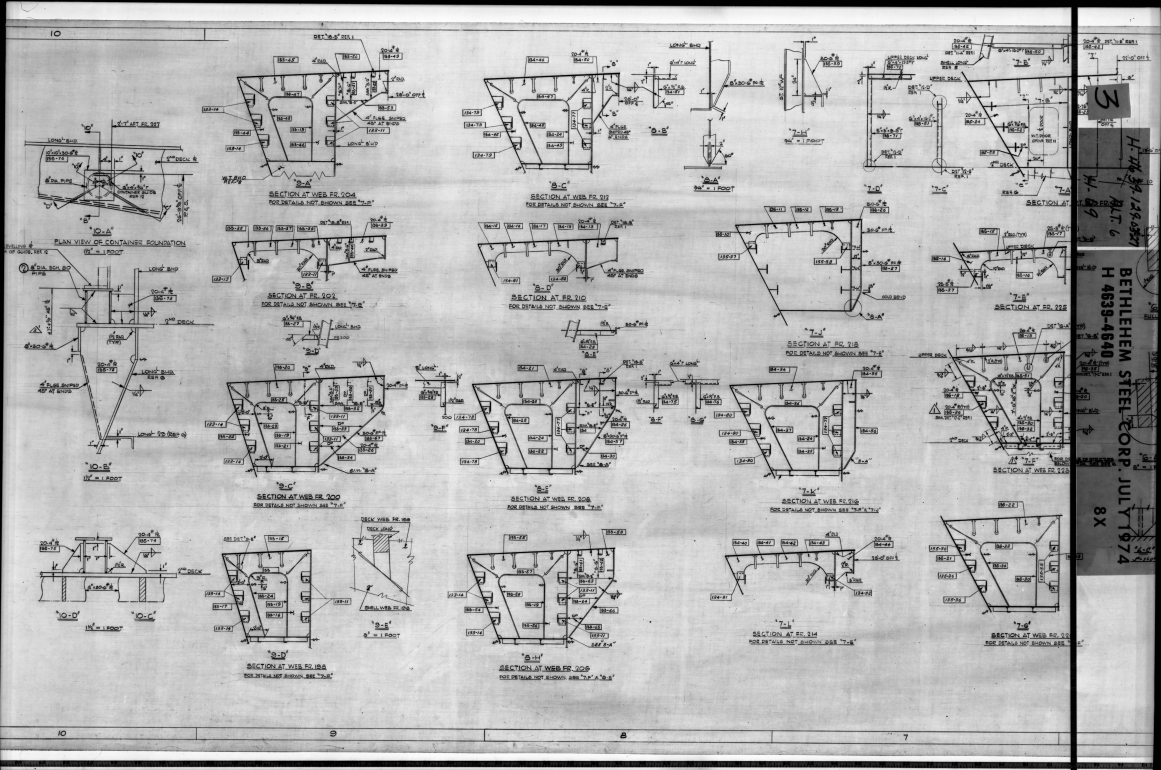
H 4639, 4639-A, ALT 6
H 69

BETHLEHEM STEEL CORPORATION
H 4639-4640
JULY 1974
8X



BETHLEHEM STEEL CORP. JULY 1974
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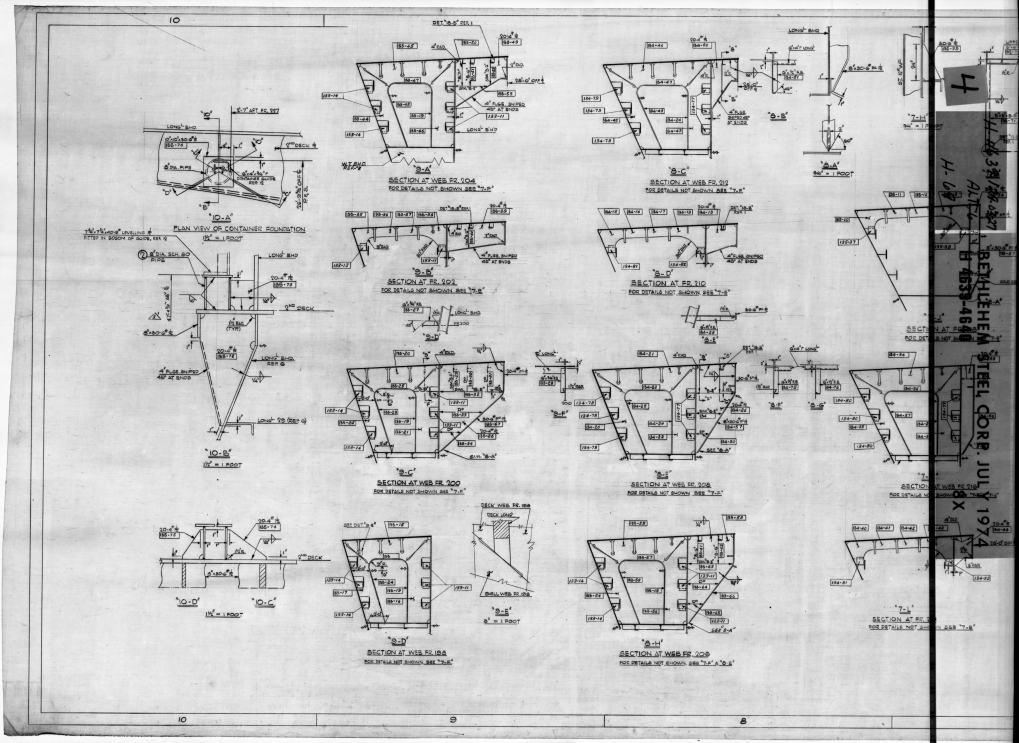
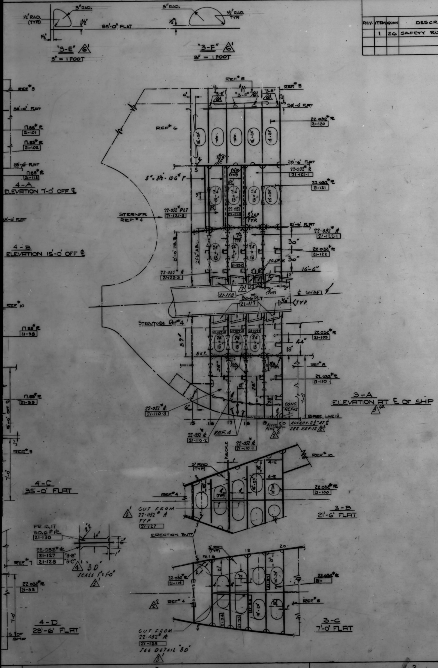


BETHLEHEM STEEL CORP. JULY 1974
4
H-4633-4640
ALT. 6
H-4633-4640
PLAN VIEW OF CONTAINER FOUNDATION
1¼" = 1 FOOT
SECTION AT WEB FR. 204
FOR DETAILS NOT SHOWN SEE "7-F"
SECTION AT WEB FR. 212
FOR DETAILS NOT SHOWN SEE "7-E"
SECTION AT FR. 202
FOR DETAILS NOT SHOWN SEE "7-E"
SECTION AT FR. 210
FOR DETAILS NOT SHOWN SEE "7-E"
SECTION AT WEB FR. 200
FOR DETAILS NOT SHOWN SEE "7-F"
SECTION AT WEB FR. 208
FOR DETAILS NOT SHOWN SEE "7-F"
SECTION AT WEB FR. 216
FOR DETAILS NOT SHOWN SEE "7-E"
SECTION AT WEB FR. 188
FOR DETAILS NOT SHOWN SEE "7-E"
SECTION AT WEB FR. 209
FOR DETAILS NOT SHOWN SEE "7-F" & "8-E"
SECTION AT FR. 2
FOR DETAILS NOT SHOWN SEE "7-E"



BILL OF MATERIAL (QUAN LISTED FOR ONE SHIP)

REV.	ITEM	QUAN	DESCRIPTION	MATERIAL	MATERIAL SPEC.	PATT OR SYMBOL NO	REMARKS	SHT# H.S.	
	1	26	SAFETY RUNG'S X = 6"	STEEL	ABS. OR EQUAL	"21-A" REF#2	1" SQ. BAR - LENGTH TO SUIT		URO

GENERAL NOTES

1) ALL SECTIONS DRAWN LOOKING FORWARD
2) ALL BUTT WELDING IS TO BE IN ACCORDANCE WITH REF#1
ALL OTHER WELDING TO BE 1/4" DOUBLE CONTINUOUS, UNLESS OTHERWISE NOTED.
3) MANHOLES TO BE IN THE CENTER OF UNSTIFFENED PLATE PANELS, UNLESS OTHERWISE NOTED

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	7/29/70		THIS PLAN IS A DUPLICATE OF PLAN NO. H4672-129-03-26 REV. 2 PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS:		
2	8/19/70	1, 9	1. REFERENCES UPDATED & SWASH B'H'D INDICATED AT FR. 16. ALL PER OWNERS COMMENTS 8/12/70.	RJC	
	1/20/71	ALL	2. STERN OF SHIP RESHAPED BET. FRS. 10 TO 20 & FROM ℄ TO ℄ OF SHAFT. FRAMING & DETS. MOD. AS FOLLOWS: DETS "3-A & 3-C" MOD. DET "B-A" ADDED. & FRS. 16, 17, 18, 19 & 20 MOD. TO SUIT. ABOVE ITEM 2 TO SUIT DEV. OF ADDED REF. 11 & DEPARTURE Nº 005.		USCG 3/2/71 OWNERS 7/1/71
		3-5, 6	3. ELEV. ON ℄ (3-A) & DRAIN CUTS AT FRS. 17 & 18 REVISED TO SUIT ADDED REF-12 (DEP. 005)	JJD	ABS 5-5-71
3	3/25/71	3,5 6,7 8	1 CENTRELINE BULKHEAD ADDED BETWEEN FRAMES 16 & 20 PER OWNERS LETTER 3512/S11-2-S11-3 DATED MARCH 2ND 1971	D.T.	ABS 5/18/71
		6,7 8	2. ACCESS MANHOLES ELONGATED TO SUIT ABOVE.		
		3	3 BKTS DELETED FRAMES 18-19 BELOW 7'-0" & 28'-6" FLATS TO SUIT ABOVE	JJD	USCG 5-12-71 OWNER 4-29-71
4	5-7-71	3 7 8	1) RADIUS CORNERS FOR INSERT PLTS @ LIGHTING HOLES IN WAY OF ℄ BHD. INCREASED AT FLRS. 16, 17 & 18. DET. "7-A" ADDED. DET. "3-D" MODIFIED TO INCLUDE 30.6# PLT USED AT FLRS. 16, 17. ABOVE CHANGES TO SUIT COMMENTS IN OWNERS APPVL. LETTER DTD. 4-29-71 ALT 3B	N.J.T. 5.7.71 JJD CBP	USCG 6/16/71 ABS 7-14-71
5	4/10/72	4	1. IN "4-C", PLATED IN 35'-0" FL. BETWEEN FR'S 20-16 7'-3" OFF ℄, TO INCORPORATE DIESEL OIL TANK. (SK. #4639-129-99-13)	P.K.	4-11-72 USCG 5/31/72 ABS 6/16/72
6	5/24/72		1/ DRAIN HOLES CUT IN ℄ SWASH BHD ABOVE 35'-0" FLAT. SEE DET. "3-A" & NEW DETS. "3-E" & "3-F" IN ACCORDANCE WITH COMMENTS IN G.G. SHARP LETTER REF. 3512/S11 DATED MAY 10 1972. (YIS #81)	R.J.G.	5.25.72 ABS 7/19/72 USCG 6/30/72
7	9/28/72	3	1 IN "3-A" CUT COLLAR PL. ABV. SHAFT BETWEEN FR 18-19 (H-14), ALT. DUE TO INSTALLATION OF GREASE CONNECTION.	P.K.	

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO. 129

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE JULY 17, 1970
DRAWN 9/15 RJC APPROVED
TRACED APPROVED
CHECKED APPROVED

PLAN NO. 4639-129-03-28 ALT. NO. 7

AFT PEAK FRAMING & BHD BELOW 35'-0" FLAT
(FRS. 16 TO 20)

URO 39446-X

REFERENCE PLANS

NO.	PLAN NO.	TITLE
12	H-4639-181-1	BLEEDER PLUGS, SCUPPERS ARRGT. & DETAILS
11	H4639-121-99-2	MODS. TO STERN FRAME PROP. HUB CASTING
10	03-43	SHELL STRINGERS IN MACHY. SPACE FRS. 20-64 INCL.
9	01-8	DIST. WATER & LUBE OIL TK. BHDS. IN MACHY. SPACE
8	03-1	INNER BTM. PLTG., FLOORS & GIRDERS FRS. 20 TO 48
7	02-1	MACHY. FLAT 28'-6" LEVEL FR. 20 TO 64
6	03-31	AFT PEAK FRG. 35'-0" FLAT & BELOW FRS. 6-16
5	129-03-29	AFT PEAK FR. 35'-0" FLAT TO UPPER DK. FRS 6-19
4	121-1	STERN FRAME & STERN TUBE
3	H4639-129-05-1	SHELL EXPANSION AFT FR. 64
2	STD-129-00-1	STRUCTURAL DETAILS
1	STD-129-00-2	PL EDGE DETAILS FOR STD BUTT WELDS

APPROVAL LETTERS

HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	8/12/70	10-19-72			
A.B.S.	8/28/70	11-2-72			
U.S.C.G.	9/21/70	11-9-72			
LLOYD'S R.S.					
U.S.P.H.S.					

O.D. MARKS
2-19-71
4-23-71
6-1-71

DATE OF ISSUE

ALTERATION	1	1	2	2	2	3	3	4	5	6	7
ENGINEERING DISTRIBUTION	7/27/70	7/29/70	2/4/71	2/10/71	2/25/71	3/27/71	5/14/71	6/8/71	4/17/72	5/31/72	9/30/72
OWNERS & INSP.	2		5			6	3		3	3	5
AMERICAN BUREAU	3		3			3	3		3	3	3
LLOYD'S R.S.											
U.S.M.A. & INSP	1		2			2	2		2	2	2
U S NAVY											
U.S.C.G.	3		3			3	3		3	3	3
JOINER CONT'R.											
PEFERSACK	2		2								
OWNER'S INSP.	1	1		1	1	1	1	1			
AM. BU. INSP.		1		1		1	1		1	1	1
LLOYD'S INSP.											
U.S.M.A. INSP.	1										
U.S. NAVY INSP.											
U.S.C.G. INSP.		1		1		1	1		1	1	1
HULL DRAFT.-21		1		1	1	1	1	1	1	1	1
MACH. DRAFT.-22		1		1		1	1		1	1	1
ELEC. DRAFT.-23		1		1		1	1		1	1	1
OUTFIT DRAFT.-25											
ESTIMATING											
C.O. SCHAUB		1		1		1	1		1	1	1
PRODUCTION (BCD)											
ORDER DEPT.											
JOINER CONT. YARD											
TOTAL ENG'R. DIST.	13	7	15	7	2	21	18	2	17	17	19
PIECE RATE-11	1	1	1	1	1	1	1	1	1	1	1
TEST DEPARTMENT											
R.B. ROBERTS	3	3	3	3	3	3	3	3	3	3	3
HULL PLANNING	1	1	1	1	1	1	1	1	1	1	1
GROUND ASSEMBLY	8	8	8	8	8	8	4	4	4	4	4
55 DEPT.	4	4	4	4	4	4	2	2	2	2	2
NO. WAY											
NO. WAY											
NO. WAY											
NO. WAY											
STRUCT. SUPER.	2	2	2	2	2	2	2	2	2	2	2
OPTICAL DETAIL-46	1	1	1	1	1	1	2	2	2	2	2
WET DOCK											
PIPE SHOP-52											
OUTFIT. #1 PIER											
PIPE DRAFT-52	2	2	2	2	2	2	2	2	2	2	2
BOILER SHOP-58											
OUTSIDE MACH.-60	2	2	2	2	2	2	2	2	1	1	1
ELECTRIC SHOP-70											
SHEET MET. SHOP-74	3	3	3	3	3	3	3	3	3	2	2
COPPER SHOP-81											
PAINT SHOP-78	1	1	1	1	1	1	1	1	1	1	1
WELDING	1	1	1	1	1	1	1	1	1	1	1
MOLD LOFT-41	1	1	1	1	1	1	1	1	1	1	1
BRACKET SHOP											
ORDER DEPT	1			1	1	1	1	1	1	1	1
TOTAL YARD DIST.	36	30	30	31	31	34	26	24	34	27	

H-70

22.5 SQ.FT.

4639-40 - ALT 6,7

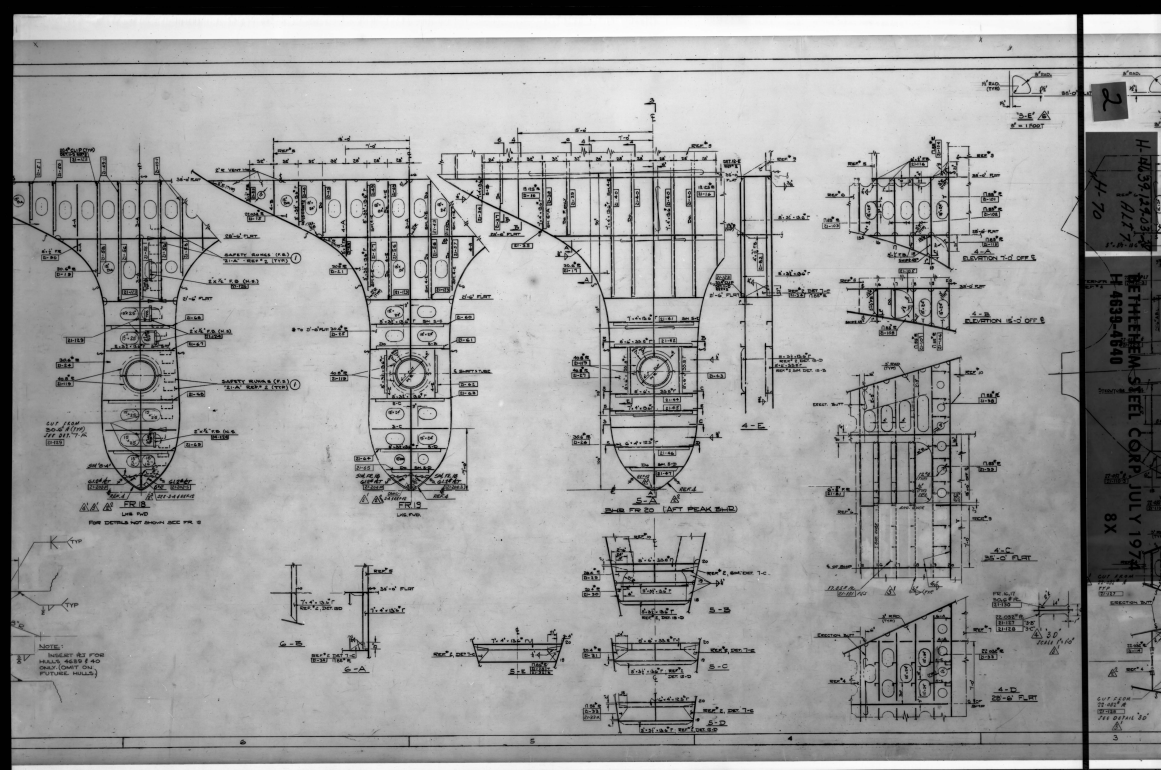
H4639-129-03-28

55 02 x^3

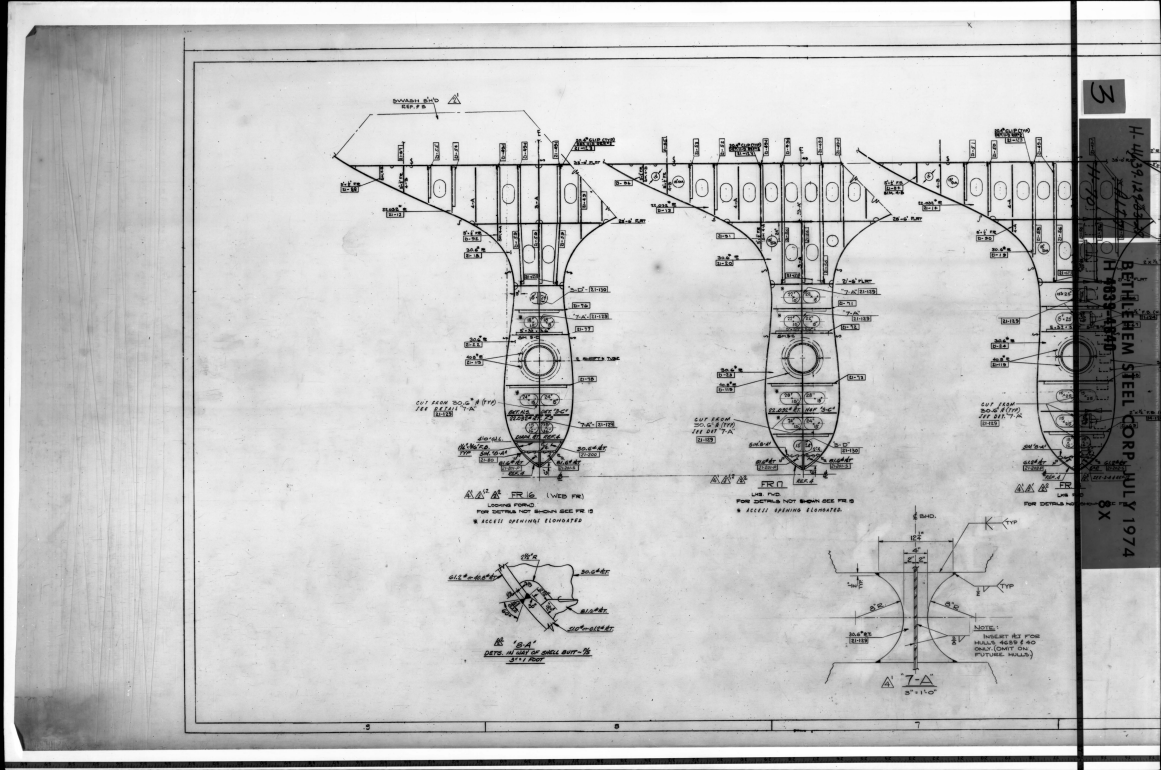
H-4639.129-03-28
ALT 7
H-70

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

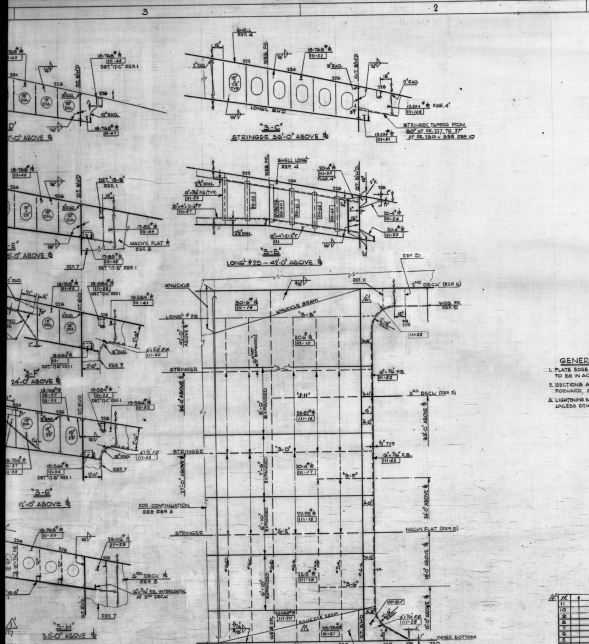
1



BETHLEHEM STEEL CORP. JULY 1971
H 4639-4640
8X



BETHLEHEM STEEL CORP. JULY 1974
H-4839-4840
H-4839-4840
3
8X
SWASH BHD
EXP. F.B.
FR 16 (WEB FR)
LOOKING FORWD
FOR DETAILS NOT SHOWN SEE FR 15
* ACCESS OPENING ELONGATED
FR 0
LOOKING FORWD
FOR DETAILS NOT SHOWN SEE FR 15
* ACCESS OPENING ELONGATED
"B-A"
DETS. IN WAY OF SHELL BUTT - 1/2
3"=1 FOOT
"7-A"
3"=1'-0"
NOTE:
INSERT PLT FOR
HULLS 4639 & 40
ONLY. (OMIT ON
FUTURE HULLS)



ELEVATION OF LONG'L BHD

DRAWN FOR PORT SIDE, LOOKING TO PORT — STARD SIDE SIMILAR

GENERAL NOTES:

1. PLATE EDGE PREPARATION FOR BEAMS & BUTTS TO BE IN ACCORDANCE WITH SPEC. 5.
2. SECTIONS ARE DRAWN FOR PORT SIDE LOOKING FORWARD, STARD SIDE SIMILAR.
3. LIGHTENING & ACCESS HOLES TO BE CENTERED IN PANEL UNLESS OTHERWISE NOTED.

NO.	PLAN NO.	TITLE
11	4639-129-03-25	APPROACH PLATFORM AND GANGWAY SH
10	03-24	TRANSVERSE WEBS FRS. 208-159
9	03-23	SHELL STRINGERS FRS. 208-159
8	03-22	TRANS. WEB FRS. 159-30 PORT, 30 STBD.
7	03-21	LONG'L BHD TRANS WEBS BUILT UP'S FRS. 30-11
6	03-20	SHELL STRINGERS FRS. 30-11
5	03-19	LONG'L BHD. TRANS. WEB FRS. 11-0
4	03-18	3RD DECK & STRUCTURE UNDER SHELL EXP. 3
3	03-17	3RD & 2ND DECK & STRUCTURE UNDER SHELL EXP. 2
2	4639-129-03-16	LONG'L BHD. FRS. 208-159 PORT
1	4639-129-03-15	LONG'L BHD. FRS. 208-159 STARD
0	03-06	PLATE EDGE DETAILS FOR STANDARD SHT. 4639-129-03-06-1
	03-06-1	STRUCTURAL DETAILS

REFERENCE PLANS

NO.	DATE	DESCRIPTION	MADE BY	APPR.
1	7-2-71	LONG'L BHD MODIFIED TO INCLUDE LOWER KNUCKLE. SEE 7-2-71 ADDITIONS AT SEA, 211 THRU 228	RGK	
2	8-5-71	1. ADD 3/8" PL'T & 6"x6"x1/2" ANGLES 6"x6"x1/2" ANGLES AT KNUCKLE. ALSO ADD SHAPES AS DETAILED ON 4639-129-03-06-1 SHT. 2 OF 2	RGK	
		2. ADD 3/8" PL'T AT KNUCKLE BETWEEN 6" & 16" PL'S. ADDITIONAL 6" & 16" PL'S ADDED. SEE PLAN 4639-129-03-06-1 SHT. 2 OF 2	RGK	
3	8-9-71	1. CONDUIT WAS ADDED BELOW 3RD DECK ON WING SIDE OF 2ND TRANS WEB.	RGK	
		2. ALL STRINGERS APPL. ADDED FROM 4TH DECK TO KNUCKLE.	RGK	
4	8-12-71	1. ADD 3/8" PL'T, 6"x6"x1/2" ANGLES, 6"x6"x1/2" ANGLES, 16" LONG AND 2. ADD 3/8" PL'T AT 16" PL'S. SEE PLAN 4639-129-03-06-1 SHT. 2 OF 2	RGK	
5	8-26-71	ADD 1 1/4" DIA. HOLES TO 16" PL'S. SEE PLAN 4639-129-03-06-1 SHT. 2 OF 2	RGK	

4640		4633	
4635		4632	
HULL	DESIGN	CHARGE	

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SHIPYARD PORT, MD. 21219

SCALE 3/8" = 1'-0" DATE 8/26/1971
DRAWN [illegible] APPROVED
TRACED [illegible] APPROVED
CHECKED [illegible] APPROVED [illegible]
PLAN NO. 4639-129-03-06 ALT. NO.

LONG'L BHD. TRANS. WEBS BELOW 2ND DECK & WING BHD

FRS. 211-228

APPROVAL LETTERS

HULL	8-26-71				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNER	9-10-71				
ABS	9-20-71				
U.S.C.G.	9-28-71				
NAVSHIPS					

7-2-71 8-5-71 8-12-71 8-26-71

H-4639-129-03-25

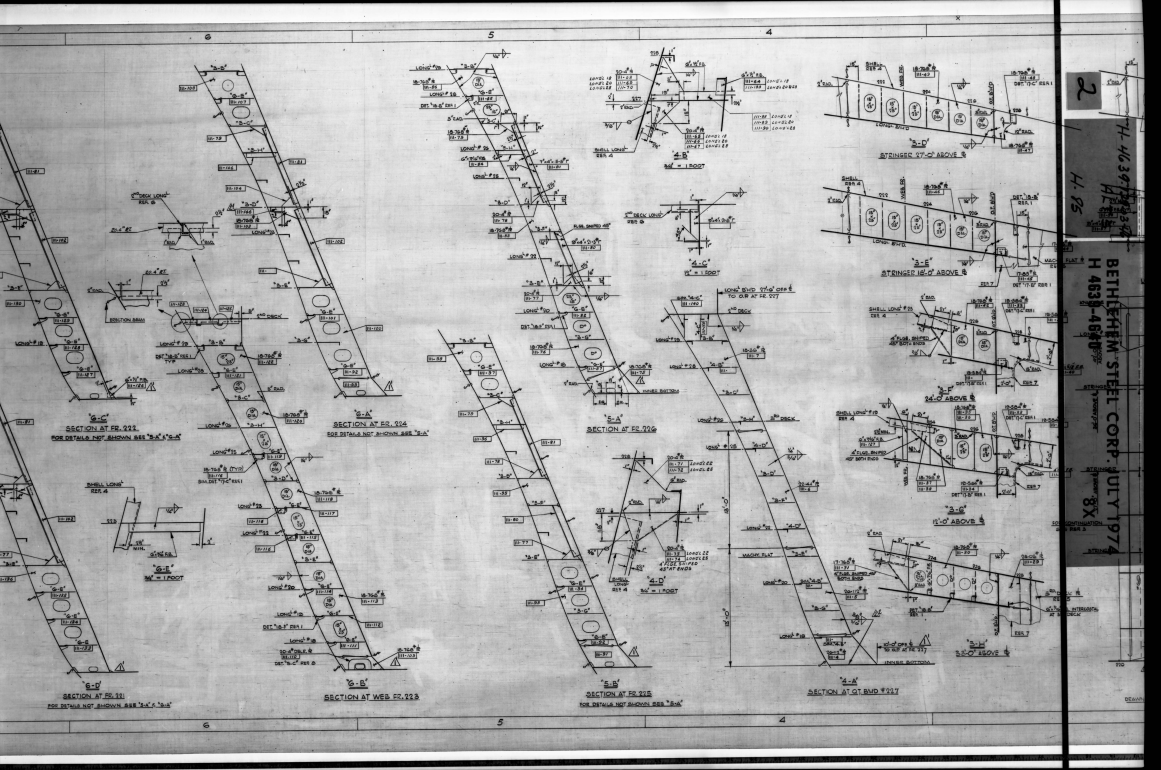
H-4639-129-03-24 ALT-5

H-25

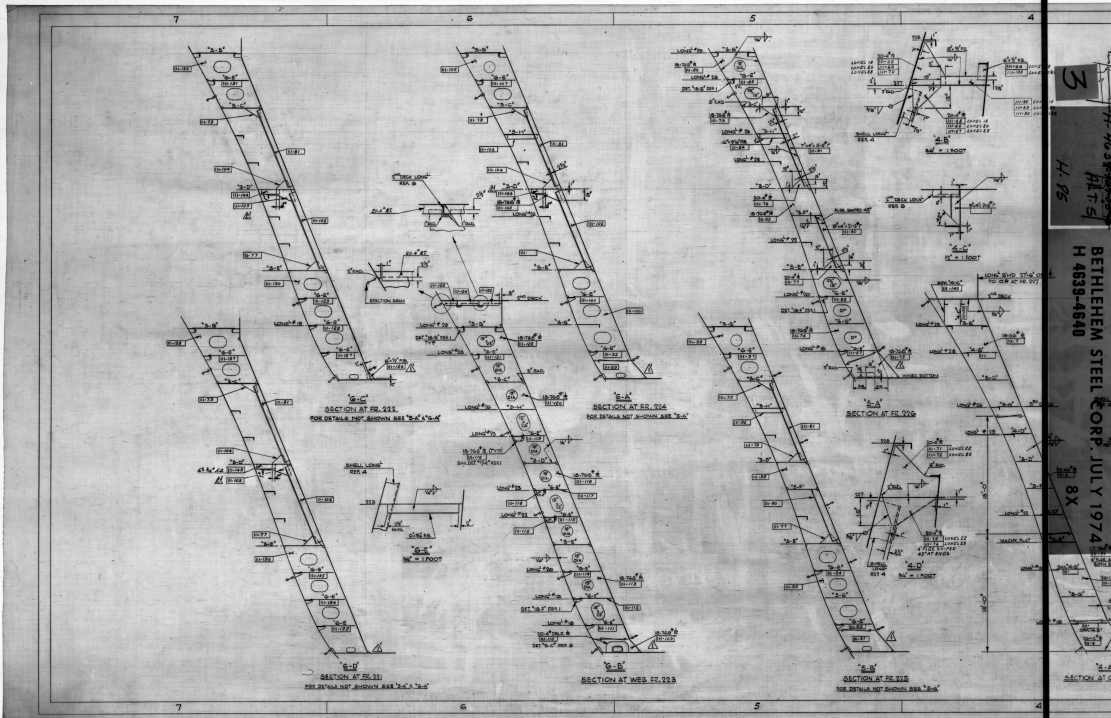
BETHLEHEM STEEL CORP. JULY 1974

H 4639-4640

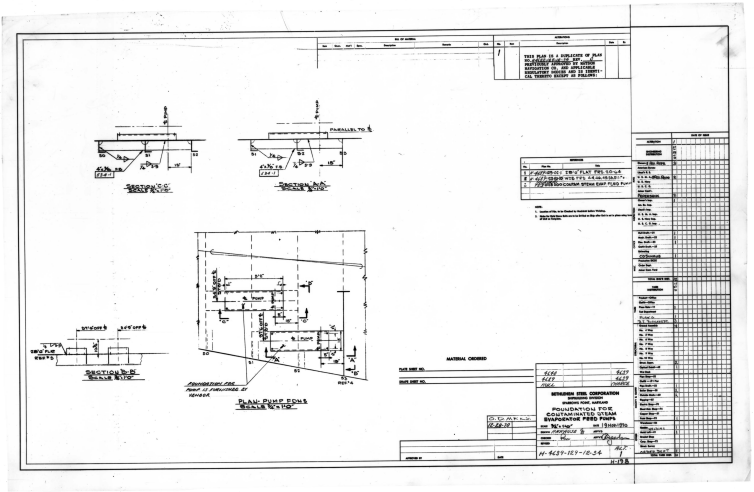
8X



BETHLEHEM STEEL CORP. JULY 1974
H 463[illegible]-46[illegible]
H. 85
2
8X
SECTION AT FR. 222
FOR DETAILS NOT SHOWN SEE "B-A" & "G-A"
SECTION AT FR. 224
FOR DETAILS NOT SHOWN SEE "B-A"
SECTION AT FR. 226
SECTION AT FR. 221
FOR DETAILS NOT SHOWN SEE "B-A" & "G-A"
SECTION AT WEB FR. 223
SECTION AT FR. 225
FOR DETAILS NOT SHOWN SEE "B-A"
SECTION AT GT. BHD. #227
STRINGER 27'-0" ABOVE ℄
STRINGER 16'-0" ABOVE ℄
24'-0" ABOVE ℄
12'-0" ABOVE ℄
3'-0" ABOVE ℄



BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
3
H-46
ALT. S
H-95
SECTION AT FR. 222
FOR DETAILS NOT SHOWN SEE "B-A" & "C-A"
SECTION AT FR. 224
FOR DETAILS NOT SHOWN SEE "B-A"
SECTION AT FR. 226
SECTION AT FR. 221
FOR DETAILS NOT SHOWN SEE "B-A" & "C-A"
SECTION AT WEB FR. 223
SECTION AT FR. 225
FOR DETAILS NOT SHOWN SEE "B-A"
SECTION AT QT. BHD.



H-4639-129-12-34
ALT 1
H-198

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

JOB N°161 — ALTERATIONS — SHT. 3

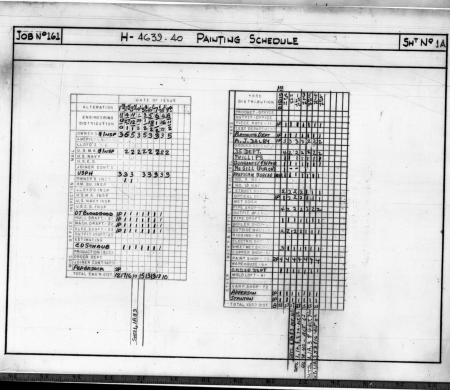
ALT. NO.	SHT. NO.	DWG.	DESCRIPTION	APPROVAL: BY BUILDER DATE	BY OWNER DATE	BY
	3	26	ALTERATION #3 (CONTD) 11. LINE 15 ADDED ITEM "3.3.4.5.6.7.8.9 REVISED TO 3.3.4.5.6.7.8.9 & 10 SEE 3/26/68 LTR & PHONE AUGUST 13, 1970	11/8/70	11/9/70	
	4	1	1. RMS NR 2 ADDED ADV IN ACCORDANCE WITH G.S.B. LTR DATED 12-2-70 SEE ATT 12/11/70 NR 4	12/11/70	12/21/70	
	5	7A	1. LINE 7 "LOUNGE" REVISED TO "LOUNGE & TV ROOM" 2. LINE 7 ADDED COLOR PAINT SCHEDULE SEE ATTACHED SHEET 3	12/16/70	12/21/70	
	6	1	1. RESCRIPTION #1 ADDED OR ALOW ADJ.	12/16/70	12/21/70	
	7	4	1. LINE 16 "SOLID SHEET" REVISED TO "SOLID SHEET" ADDED.	12/16/70	12/21/70	
	8	3A	1. LINE 1 "PAINT ALL PIPE WORK EXPOSED IN ENGINE ROOM" TO BE PAINTED AS PER SPECIFICATIONS	12/16/70	12/21/70	
	9	7A	1. LINE 9 "DELETED FEEL NAME LETTERING 2. LINE 9 "TO PAINT" TO REVISED TO "TO PAINT" 3. LINE NR 22 FOR ADDED PAINT OF METAL DECKS ADDED PER TRON REVISED INC. 1605 LTR. DATED 12-16-70	12/16/70	12/21/70	

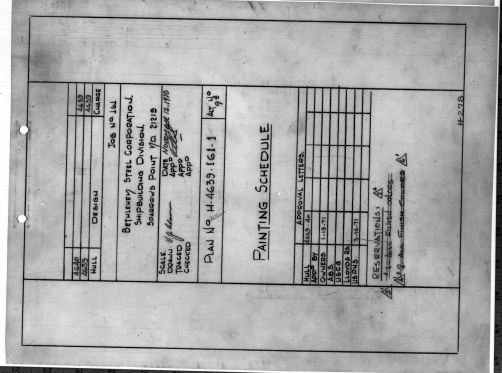
JOB N°161 — ALTERATIONS — SHT. 2

ALT. NO.	SHT. NO.	DWG.	DESCRIPTION	APPROVAL: BY BUILDER DATE	BY OWNER DATE	BY
1			1- THIS PLAN IS A DUPLICATE OF PLAN H-4639-161-1 REV 12 PREVIOUSLY APPROVED BY MARSHALL VANGUARD CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS:			
4			2- PLANT NO 4647 DELETED			
5&6			3- AS-BUILT NOTES, SECT. B - E: DIMENSIONAL LOCATION OF FRAMES AT LEAST THREE REVISED THROUGHOUT TO INCLUDE ADDITIONAL FRAMES			
	5&6		4- IN ADDITION TO THE ABOVE IDENTIFYING LOCATIONS OF FRAME MARKS THEMSELVES REVISED TO CONFORM TO LATEST CONSTRUCTION ARRANGEMENT PLANS.			
8	2	19	5- LINES 20 THRU 27 REVISED TO REFLECT CHANGES IN AREAS OF SPACES AS INDICATED ON CONTRACT PLANS			
9		3,9	6- LINE 3 WORDS "FRONT SIDE HAVE BEEN DELETED & ONLY 1 SIDEBOARDS CHOSEN			
10	2&8 3,9 13		7- LINES 5-9 REVISED TO REFLECT NEW ARRANGEMENT ON LINES 9 ADDED "EXCEPT GARBAGE ROOM" ON LINE 13 SCULLERY NOTED IN LIEU OF SERVICE SERVICE			
11	2&8 3,9 13		8- LINE 15 LOCATING FRAME NUMBERS REVISED & ON LINES 17-25 LOCATING FRAMES & ON LINES 26 & 27 REVISED TO CONFORM TO LATEST ARRANGEMENT PLANS			
		1	9- LINE 1 ED REVISED & MADE APPLICABLE TO NEW "B" SHIP ADDED TO CONTRACT PLANS			

ALT. NO.	SHT. NO.	DWG.	DESCRIPTION	APPROVAL: BY BUILDER DATE	BY OWNER DATE	BY
1		16A 5A	10- LINES 1-24 ADDED FOR A SOAK SPACES AND APPROPRIATE PAINT SYSTEM HAS BEEN NOTED			
		16 5	11- LINE 5 MODIFIED FOR CLARIFICATION & LINES 11-16 DELETED TO SUITE SELECTION OF TILE INSTALLATION, THUS "4 & 4 5A"			
		16 5	12- ON LINE 20 LOCATION FRAME CHANGED FROM 64 TO P6 64			
		17 11-15	13- LINES 11-17 REVISED TO INDICATE SEMI-GLOSS FINISH ON EXPOSED PIPING			
		18 3	14- LINE 3 REVISED TO SHOW BTH WINDOWS AT FES NR. 108 & 108 IN LIEU OF 106 & 112 TO CONFORM TO LATEST CONSTRUCTION PLANS			
		2 18-22	1- ADDED LINES NO. 14 FOR CATHODIC PROTECTION SYSTEM AND ADDITIONAL ITEMS AS PER ITS DRFT ISSUED W/ MEMO OF NOV. 20, 1970			
		4	2- ADDED PAINT "P6" AS ABOVE			
		5&6	3- GEN. NOTE "4" REVISED TO READ "ES. TO 4E & 4F 4S" IN LIEU OF "E-4 & F-4S"			
		1	4- CH. SHEET 1 - OBSERVATORY'S RPT. ALL PAINT ITEMS ADDED. 5- ITEM 3.15 NO ADDED WITH MATCH APPR. LETTER PP JAN 19 1971			
		4	7. DESCRIPTION 7 REVISED			
		4 12	8. LINE 7 & 8 DELETED			
		12	9. LINE 7 & DELETED-SHOWS GRAY & ADDED PAINT #4E-4F-4S			
		3 14 & 15	10. LINE 14 & 15 DELETED			
		3 16 & 17	11. LINE 16 & 17 ADDED			
		3	12. SHEET 3 & REVISION 13. SHEET 4 ADDED			
		7	14. LINE 7 & FINISH COLOR ADDED			
		7	LINES 31-33 ADDED.			
		16	LINES 13-21 DELETED			

JOB N°161 — H-4639-40 PAINTING SCHEDULE — SHT N° 1A





H-4639-161-1
H-278
PAINTING SCHEDULE
SHT. NO. 1 OF 3
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

H4639-16-1
ALT. 9
H-276
SHT. 4, 4A, 5, 5A
H 4639-4640

BETHLEHEM STEEL CORP. JULY 1974
6X

JOB Nº 161 | PAINTING SCHEDULE | SHT. Nº5A

GENERAL NOTES

Subcontracts

8. STEEL PREPARATION (Cont'd)

   e. Structure - Bonnet Bolt to Accumulators, Structure - Retainer Bonnet Bolt to Accumulators, Structure - Accumulators, Structure - Piston Stations - Retainer Rods, Bonnet and Pins - To be Painted, Including Bare Areas Caused by Field Installation.

   f. Structure - Bonnet Bolt to Accumulators, Structure - Retainer Bonnet Bolt to Accumulators, Structure - Accumulators, Structure - Piston Stations - Retainer Rods, Bonnet and Pins - To be Painted, Including Bare Areas Caused by Field Installation.

   g. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   h. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   i. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   j. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   k. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   l. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   m. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   n. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   o. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   p. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   q. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   r. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   s. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   t. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   u. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   v. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   w. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   x. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   y. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   z. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   aa. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   bb. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   cc. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   dd. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   ee. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   ff. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   gg. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   hh. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   ii. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   jj. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   kk. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   ll. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   mm. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   nn. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   oo. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   pp. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   qq. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   rr. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   ss. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   tt. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   uu. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   vv. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   ww. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   xx. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   yy. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

   zz. Structure - Stairways, Platforms, Handrails, Ladders, Gratings, Checkered Plate, Etc. Shall be Painted in accordance with Structural Steel Painting Council's Specification SSPC-PA-2. See Note No. 2

JOB Nº 161 | PAINTING SCHEDULE | SHT. Nº4A

Paint Nº	DESCRIPTION	VENDORS PAINT Nº	VENDOR
37	ASPHALT EMULSION	C-4-E	FLINTCOTE ⊕
38	ALERT COAT	"	TEXACO or EQUAL
39	ZINC CHROMATE	53-1076	El DuPont de Nemours Co ✓
40	AIRBLOW TRAK DUC PRETREATING	E-WCOAT-70	KENT MILCO
41	ZINC-DUST		
42	THERMOLINE - BLACK	107	THE DUPLI-COLOR CO
43	TRAK - TO MATCH HARMONY COLOR	CODE NO. C-1237	El DUPONT DE NEMOURS CO
	TO MATCH HARMONY COLOR	CODE NO. C-261	"
44	HIGH HUMIDITY YELLOW	733-3041-2268	PLASTOGRIP CO.
45	COAL TAR EPOXY		
46	SAFETY WALK - SKATH TREAD	—	3-M "SAFETY WALK" MINERAL GRATED SKATH TREAD WITH RESILITE
			GRIPPING ABRASIVE BACKING, 4" HOSE "B"-0"C" CUTS ONLY - BLACK
47 48	SEALER	—	3-M "BEDDING SEALER

JOB Nº 161 | PAINTING SCHEDULE | SHT. Nº4

Paint Nº	DESCRIPTION	VENDORS PAINT Nº	VENDOR
1	PRECONSTRUCTION PRIMER (ZINC)	20-4487	INTERNATIONAL PAINT CO
2	" (INORGANIC ZINC)	STEEL-PRIMER	AMERCOAT CO
3	SILICE PRIMER	7748	INTERNATIONAL PAINT CO
4	SILICE PRIMER - HIGH BUILD	1748 HB	
5	INTERCOAT 800 TOPCOAT	448 LABEL	(COULD BE INTERNATIONAL PAINT 448 LABEL)
6	INTERMEDIATE	4497	
7	ANTI-FOULING	1508	INTERNATIONAL PAINT CO
8	INORGANIC ZINC	CHEMICITE 1423	AMERCOAT CO
9	"	N-5	
10	"	N-6	
11	AMERCOAT PRIMER	84	
12	VINYL - PEEL BLUE	99-SEMI-GLOSS	VENDOR TO MATCH
13	" - WHITE	99-SEMI-GLOSS	
14			
15			
16	GOLD STRIPING	AMERCOAT 1065	AMERCOAT CO. AMERCOAT 1065 VINYL
17	EPOXY-CLEAR SEAL	AMERCOAT 375	AMERCOAT CO
18	TRAK COATING - PRIMER WHITE-EPOXY	6612/6618	INTERNATIONAL PAINT CO.
19	TRAK COATING - LIGHT BLUE	6611/6615	
20	TRAK COATING - MED GRAY	6611/6613	
21	TRAK COATING - RED OXIDE	6611/6613	
22	ALUMINUM GRAY (HOLD ALKYD	TO MATCH MUNSELL	El DUPONT DE NEMOURS CO
23	HIGH VISIBILITY YELLOW	81-2348	
24	WHITE - UNDERCOAT	680-718	
25	WHITE - HIGH GLOSS	76-6508	
26	WHITE - NONSKID RESISTANT		
27	WHITE SEMI-GLOSS	98-62900	
28	RED LEAD	67-739	
29	RED OXIDE	631-738	
30	BLACK		
31	GRAY (MEDIUM) ALKYD		
32	ALUMINUM HEAT RESISTANT	356-794	
33			
34	CANVAS SEALER		
35	WASH PRIMER	FOSMOR 117	
36	RED OXIDE - NON SKID RESISTANT		

H-4639-161-1
ALT. 9
H-272
SHT 5856/68
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-1 — SHEET 5

ALT NO	LOCATION	LINE NO	PRIMERS POST-BLAST	PRIMERS PRE-ERECT	PRIMERS TYPE	PRIMERS MDFT	FINISH TIER NO.	FINISH COAT NO.	FINISH COLOR	TOTAL MDFT	REMARKS
	EXTERIORS - (CONT'D)	1									
		2									
	UPPER & MIDDLE DECKS EXPOSED TO THE WEATHER	3									
		4	2	/	AC PRIMER	0.75					
		5	8	/	DIMETCOTE	3.0-4.0			NONE		
		6									
		7									
	ALL SUPERSTRUCTURE DECKS & HOUSE TOPS NOT UPPER AND MIDDLE DECKS EXPOSED TO THE WEATHER	8									
		9									
		10	2	/	AC PRIMER	0.75					
		11	8	/	DIMETCOTE	3.0-4.0			NONE		
		12									
		13									
		14									
	WHIP, MAILING TRAY, BOW & STERN	15	2	/	AC PRIMER	0.75					
	FREEBOARD MARKS - HASHMARK	16	8	/	DIMETCOTE	3.0-4.0	15	/	WHITE	3.0	
	DRAFT & BOW MARKS - BELOW BWL	17									
		18									
		19									
		20									
	LADDERS (GALV. AFTER FABRICATION)	21	8	/	DIMETCOTE				NONE		
		22									
		23									
9)	DELL-RAY Fiberglass Sales Director	24					15	/	WHITE	3.0	
	BOW INSIGNIA (PFEL HOUSE FLAG)	25									FIBER GLASS DECAL
		26									
		27									
	RUDDER & RUDDER HORN (EXTERIOR)	28	/	/	AC PRIMER	1.5					SAND BLASTED AFTER BLAST CLEANING FOLLOWING OF VERTICAL SEAMLESS WITH EPOXY SURFACE PUTTY FLUSH WITH ZINC PLATING
		29	3	/	PRIMER	1.5					
		30	4	/	PRIMER	4.5	7	/	ANTI-FOULING	1.0	8.0
		31									
		32									
		33									
		34									
		35									
		36									

JOB NO 161 — PAINTING SCHEDULE — SHT NO 5G

GENERAL NOTES

Subsection 5G-1

8. OTHER PREPARATION (Cont'd)

8'-1" F. Exteriors - Main Water Tanks - As per #7b, #7c Overrides, #7d, #7e Overrides and #7f Overrides, Subsection 5G-1, Main Water Tanks, Nos. 1 and 2(P).

(1) Blast Clean all exterior surfaces (non-corroded). See note No. 2.

(2) Clean off abrasives and dust and immediately apply the first coat of the coating system listed in the detail section or this schedule.

4. Exteriors - Aft. Collision Bulkhead Stiffener & Plating - Peak Tanks and A.P. Tube

(1) Blast clean to white metal finish (SSPC-SP5). See note No. 2.

(2) Clean off abrasives and dust and immediately apply pretreatment primer and the first coat of the coating system listed in the detail section or this schedule.

8'-2" H. Interiors - Fresh Water Tanks - Double Bottom Tks. #1-#2 & #3-#4 - FW

(1) Blast clean to white metal finish (SSPC-SP5). See note No. 2.

(2) Clean off abrasives and dust and immediately apply the first primer of the system specified in the detail section of this schedule.

J. Interiors - Fresh Water Tanks - Peak Tanks. See Note No. 2.

(1) Blast clean to white metal finish (SSPC-SP5).

(2) Clean off abrasives and dust and immediately apply the first primer of the system specified in the detail section of this schedule.

K. Interiors - Ballast and Potable Fresh Water Tanks. See Note No. 2.

(1) Blast clean to white metal finish (SSPC-SP5).

(2) Clean off abrasives and dust and immediately apply the first primer of the system specified in the detail section of this schedule.

L. Interiors - Fuel Oil Tanks - Where coating is required (#3 or #5) interiors may be done prior to erection but touch-up after erection is required.

(1) Blast prior to application of first coating, clean of existing damage and to be compatible with the coating system listed in the detail section of this schedule. Use intermediate coating system in accordance with the paint manufacturer's recommendations.

M. Areas of existing coating or overcoated systems are to be touched-up to extend the life of the existing coating system as listed in Subsection 5A-1(F).

8'-3" N. Interiors - Fuel Oil Tanks

Deep Tank #1-A - Side Tank #1 (P&S), #2A (P&S), #2 (P&S), #4A (P&S), #4 (P&S).

(1) Tanks are to be thoroughly cleaned and left bare.

JOB NO 161-1 — PAINT SCHEDULE — HULL NO 4639-40 — SHEET 6

ALT NO	LOCATION	LINE NO	PRIMERS POST-BLAST	PRIMERS PRE-ERECT	PRIMERS TYPE	PRIMERS MDFT	FINISH TIER NO.	FINISH COAT NO.	FINISH COLOR	TOTAL MDFT	REMARKS
	EXTERIOR HULL -	1									
	KEEL TO LOAD LINE (EL 4.417'-22'-0" FWD)	2									
	INTERIOR(SCREEN) OF SEACHESTS & STRAINERS - SIDES TO LOADLINE	3									
		4	/	/	AC PRIMER	1.0					
		5	3	/	PRIMER	1.5					
		6	4	/	PRIMER	4.5	7	/	ANTI-FOULING	1.0	8.0
		7									
	AT INITIAL DRY DOCKING - ALL AREAS AFTER CLEANING	8									
	TOUCH-UP - CLEANED AREAS ENTIRE AREA	9	3	2	PRIMER	3.0					
		10	1	3	PRIMER	1.0	7	/	ANTI-FOULING	1.0	- TOTAL FOR SYSTEM 10.0 MILS
		11									
	LOAD LINE TO BOTTOM OF 12" WIDE STRIPE	12									
		13	2	/	AC PRIMER	0.75					
		14	8	/	DIMETCOTE	3.0-4.0					
		15	11	/	PRIMER	1.0	12	/	PFEL BLUE	3.0	
		16									
	12" WIDE STRIPE - TOP 3'-0" BELOW TOP OF UPPER DECK SHEER STRAKE	17	2	/	AC PRIMER	0.75					
		18	8	/	DIMETCOTE	3.0-4.0					
		19	11	/	PRIMER	1.0	16	/	GOLD	3.0	
		20					17	/	CLEAR SEAL	2.0	
		21									
	TOP OF 12" STRIPE TO TOP OF UPPER DECK CURVED SHEAR (AFT OF P.E.) AND TO A LINE ON THE FRESSE SIDE HIGHWAY BETWEEN THE TOP OF THE 12" STRIPE & THE TOP OF THE FRESSE	22									
		23									
		24									
		25									
		26									
	DECK BULWARK	27	2	/	AC PRIMER	0.75					
		28	8	/	DIMETCOTE	3.0-4.0					
		29	11	/	PRIMER	1.0	18	/	PFEL BLUE	3.0	
		30									
	BALANCE OF FREESIDE SIDE TO TOP OF FRESSE, BULWARKS, INSIDE SIDE OF FREESIDE BULWARK, EXPOSED SIDE OF LOWER DECK BULWARK AFT.	31									
		32									
		33	2	/	AC PRIMER	0.75					
		34	8	/	DIMETCOTE	3.0-4.0					
		35	11	/	PRIMER	1.0	19	/	WHITE	3.0	
		36									

JOB NO 161 — PAINTING SCHEDULE — SHT NO 6G

GENERAL NOTES

Subsection 6G-1

2'-1" M. Interiors - Fresh Water Tanks - Double Bottom Tks. #1-#2 & #3-#4 - FW

(1) Blast clean to white metal finish (SSPC-SP5). See note No. 2.

(2) Clean off abrasives and dust and immediately apply pretreatment primer and the first coat of the coating system listed in the detail section of this schedule.

(3) Blast clean all interior surfaces (non-corroded). See note No. 2.

(4) Clean off abrasives and dust and immediately apply the first coat of the coating system listed in the detail section of this schedule.

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-3 — SHEET 5

ALT NO	LOCATION	LINE NO	PRIMERS PRIM. COL.	PRIMERS COAT NO.	PRIMERS TYPE	PRIMERS MDFT	FINISH PRIM. COL.	FINISH COAT NO.	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIORS - CONT'	1										
	SECOND DECK - (CONT')	2										
1*	FRS. 149 TO 164	3										
	OUTBD SIDES FRS 150 TO 156	4										
	BULKHEAD, OVERHEAD & DECK COVERED BY INSULATION	5	37	1	NOMACTHALON	-						
		6										
		7										
	ENGINE DEPT PAINT ROOM,	8										
1A	ELECTRIC SHAFT ALT. CLOSET,	9										
	ENGINEER'S STORE ROOM	10	1	1	RC PRIMER	-						
	BULKHEADS & OVERHEADS	11	28	2	RED LEAD	2.0	24	1	WHITE	1.0		
		12					25	1	WHITE	1.0	4.0	
	DECKS	13		1	RC PRIMER	-						
		14	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0	
		15										
		16										
	ENGINEERS WORK SHOP	17										
	CPO'S MESS & ENGINEERING	18										
	BULKHEADS & OVERHEADS	19	1	1	RC PRIMER	-	24	1	WHITE	1.0		
		20	28	2	RED LEAD	2.0	25	1	WHITE	1.0	4.0	
		21										
	DECKS	22	1	1	RC PRIMER	-						
		23	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0	
		24										
	STEERING GEAR ROOM &	25										
	CASUALTY ENGINE ROOM	26										
	BULKHEADS & OVERHEADS	27	1	1	RC PRIMER	-	24	1	WHITE	1.0		
		28	28	2	RED LEAD	2.0	25	1	WHITE	1.0	4.0	
	DECKS - SEMI ALLOWED #1255	29										
	ENGINE CONTROL ROOM	30	1	1	RC PRIMER	1.0	24	1	WHITE	1.0		
		31	28	2	RED LEAD	2.0	27	1	WHITE	1.0	4.0	
	SEE SHEET #7	32										
		33										
		34										
		35										
		36										

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-3 — SHEET 6

ALT NO	LOCATION	LINE NO	PRIMERS PRIM. COL.	PRIMERS COAT NO.	PRIMERS TYPE	PRIMERS MDFT	FINISH PRIM. COL.	FINISH COAT NO.	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	INTERIORS	1										
	ACCOMMODATIONS ALL DECKS	2										
	OFFICER'S & CREW'S STATE ROOMS	3										
	MESS ROOMS & LOUNGES,	4										
	OFFICES, TELEPHONE ROOM, CLERK	5										
	& SAILS LINEN LOCKERS	6										
	OTHERWISE DELINEATED & REMARKED	7										
	JOINER BULKHEADS	8										NO PAINT - MAHOGANY VENEERED BY JOINER CONTRACTOR
		9										
		10										
		11										
	STEEL BULKHEADS &	12										
	OVERHEADS BEHIND	13										
	JOINER JOINERY 84.	14	1	1	RC PRIMER	-						
	INSULATION	15	28	2	RED LEAD	2.0					2.0	
		16										
	DECKS - IN WAY OF DECK	17										
	COVERING	18	37	1	NOMACTHALON							
		19										
1*	SECOND DECK - FR. 5-64	20										
1*	AFT CAPT. & ADJOIN. STATE'S	21										
1*	MESS, OFF. STORES, CREDIT ROOM	22										
	DRUG ROOM, THEREIN & ON DECK	23										
	SHIPS TELEPHONE CLERKS	24										
	CLERK & SAILS LINEN ROOMS	25										
	STEWARDS DEPARTMENT, PANTRY,	26										
1*	STORE ROOM & PASSAGEWAY	27	1	1	RC PRIMER	-						
	BULKHEADS & OVERHEADS	28	28	2	RED LEAD	2.0	24	1	WHITE	1.0		
		29					25	1	WHITE	1.0	4.0	
		30	1	1	RC PRIMER	-						
	DECKS	31	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0	
		32										
		33										
		34										
		35										
		36										

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-3 — SHEET 7-A

ALT NO	LOCATION	LINE NO	PRIMERS PRIM. COL.	PRIMERS COAT NO.	PRIMERS TYPE	PRIMERS MDFT	FINISH PRIM. COL.	FINISH COAT NO.	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	EXTERIORS	1										
	FOREPART & MAIN MAST, GAFF,	2	1	1	RC PRIMER	0.7						
	& PLATFORMS	3	8	1	DIMETCOTE	3640						
		4	11	1	PRIMER	1.0	13	2	WHITE	3.0	5.0	
		5										
	STORES CRANE - 5 DOUG AFT	6	8	1	DIMECOTE 3640 (BY VENDOR)							
		7	11	1	PRIMER	1.0	13	2	WHITE	3.0	4.0	
		8										
	HOSE HANDLING CRANE 7½ TON*	9	8	1	DIMETCOTE 3640 (BY VENDOR)							
	& STOWAGE, AND CRANE X IN PKG	10	11	1	PRIMER	1.0	13	1	WHITE	3.0	4.0	
		11										
		12										
3*	ACCOMMODATION LADDER BOWMR	13	36	1	SYNCROMIC 7.0	7.0		1	NON-SKID	3.0		
	BOWMR	14										
	ACCOMMODATION LADDER	15										
	SLIDING STRETCHER - STBD SIDE	16	8	1	DIMECOTE	3640	BY VENDOR					
	SLIDING STRETCHER - PORT SIDE	17										
	DAVITS - PORT & STBD SIDE	18						1	NON-SKID			
1	MAIN MAST - LOWER SECTION	19						2	WHITE			
	MAIN MAST - UPPER SECTION	20										
37	OUTBOARD OF BOOMKIT	21			NOT PAINTED							
		22										
	CRANE SUPPORT PEDESTALS ON	23	9	1	RC PRIME	0.7						
	UPPER DECK & BOOM KIT SUPPORTS	24	11	1	DIMECOTE	3640						
35		25	11	1	PRIMER	1.0	13	1	WHITE	3.0	5.0	
33	GUIDES on PEDESTALS	26	11	1	PR-88	1.0	45	1	MILLION	3.0	4.0	APPLIED ON SHOP OR SHIPBOARD
		27										
		28										
22	CARGO HATCH COVERS	29	2	1	RC PRIMER	0.7						
22		30	8	1	DIMECOTE 3640				NAVAL		4.0	
		31										
23	CARGO HATCH COVER NUMBERS (12" HIGH)	32	2	1	RC PRIMER	0.7						
		33	10	1	DIMECOTE 3640	2.5	1	1	HAVY YELLOW	1.0		APPLIED SHOP OR SHIPBOARD
		34										
		35										
		36										

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-2 — SHEET 7

ALT NO	LOCATION	LINE NO	PRIMERS PRIM. COL.	PRIMERS COAT NO.	PRIMERS TYPE	PRIMERS MDFT	FINISH PRIM. COL.	FINISH COAT NO.	FINISH COLOR	FINISH MDFT	TOTAL MDFT	REMARKS
	EXTERIORS CONT	1	2	1	RC PRIMER	0.7						
	OVERHANGS OF WEATHER DECKS	2	8	1	DIMETCOTE	3640						
	CHAIN GUIDE	3	11	1	PRIMER	1.0	13	1	WHITE	3.0	4.0	
		4										
		5										
	CONTROLLED HOLD AND CARGO	6	2	1	RC PRIMER	0.7						
	HATCH COAMINGS	7	8	1	DIMETCOTE	3640						
2*		8										
	MOORING BITTS, CHOCKS, PEDESTALS	9	2	1	RC PRIMER	0.7						
	UNIVERSAL, THWARTING CHOCKS &	10	8	1	DIMETCOTE	3640						
	MOORINGS ON UPPER & FOREDECK	11										
	DECK HOUSES (INCLUDING ENGINE	12	2	1	RC PRIMER	0.7						
	FIDDLES & SKYLIGHTS)	13	8	1	DIMECOTE	3640						
		14										
		15	2	1	RC PRIMER	0.7						
	FRESHWATER ANCHOR WINDLASS	16	8	1	DIMECOTE	3640						
	GUARD FOR CONTROL STANDS, CLUTCH	17										
	OF POWER DRIVEN WINDLASS &	18										
	UNDECK BULKHEAD FAIRLEADS	19										
		20										
	INBD & OUTBD SIDES OF POWER BOATS	21	2	1	RC PRIMER	0.7						
	& DAVIT PADS ABOVE POWER DECK	22	8	1	DIMETCOTE	3640						
	INTERIOR OF BULWARKS & RAILS	23	11	1	PRIMER	1.0	13	1	WHITE	3.0	5.0	
	18" ABOVE	24										
	ANCHOR STOCK	25	2	1	RC PRIMER	0.7						
		26	8	1	DIMETCOTE	3640						
		27	11	1	PRIMER	1.0	13	1	WHITE	3.0	5.0	
		28										
		29										
		30										
		31										
		32										
		33										
		34										
		35										
		36										

H 44.34-161-1
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BETHLEHEM STEEL CORP. JULY 1974
6X

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 1611-8 — SHEET 12-A

ALT NO	LOCATION	LINE NO	PRIMERS PRINT	NO.	COATS	TYPE	MOFT	FINISH NO.	COATS	COLOR	MOFT	TOTAL MOFT	REMARKS
	NAVIGATING BRIDGE DECK CONT	1											
	WHEEL HOUSE & STEERING COMPOSES -	2											
	TOPS	3											
		4	26	2	RED LEAD	2.0	49	2	TAN	2.0	4.0	HARBOUR BLUE-C&S	
		5											
	FRONTS, SIDES, BACK & INTERIOR	6											
		7	26	2	RED LEAD	2.0	49	2	TAN	2.0	4.0	HARBOUR BLUE-C&S	
		8											
		9											
		10											
	A DECK	11											
	CLEANING LINEN LOCKERS	12											
	CLEANING GEAR LOCKERS, CAL.	13											
	LINEN LOCKERS, JOINER LINER	14											
	PANTRY, STAIRWELL & HALL	15											
	LOCKERS ON PORT SIDE	16											
	EXPOSED STEEL DECKS	17											
	& OVERHEADS	18	/	/	RC PRIMER	3.0	24	/	WHITE	3.0			
		19	28	2	RED LEAD	2.0	24	/	WHITE	1.0	4.0		
		20						25	/	WHITE	1.0	4.0	
	DECKS	21	/	/	RC PRIMER	-							
		22	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0		
	AREAS NOT LISTED SEE SHEET #8, LINES 1-18	23											
		24											
		25											
		26											
		27											
		28											
		29											
		30											
		31											
		32											
		33											
		34											
		35											
		36											

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 1611-3 — SHEET 12

ALT NO	LOCATION	LINE NO	PRIMERS PRINT	NO.	COATS	TYPE	MOFT	FINISH NO.	COATS	COLOR	MOFT	TOTAL MOFT	REMARKS
	INTERIORS CONT	1											
	FOCSLE DECK	2											
	CLEANING STORES CLEAN LINEN	3											
	LOCKERS STAIRWELL	4											
	EXPOSED STEEL BULKHEADS	5	/	/	RC PRIMER	-	24	/	WHITE	1.0			
	& OVERHEADS	6	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
	DECKS	7	/	/	RC PRIMER	-							
		8	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0		
		9											
		10											
	OFFICERS LAUNDRY	11	/	/	RC PRIMER	-	24	/	WHITE	1.0			
	EXPOSED STEEL BULKHEADS	12	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
	& OVERHEADS	13	27	/	ARMSTRONG				PAINT				
	DECK	14											
	AREAS NOT LISTED SEE SHT #8	15											
	LINES 1 TO 18 INC	16											
		17											
1'	B DECK	18											
1'	CLEANING GEAR, TOOLS, STORES	19											
1'	MAIL, RADIO, CABIN CLOTH & CONFECTIONS, HOSE	20											
	EXPOSED STEEL BULKHEADS & OVERHEADS	21	/	/	RC PRIMER	-	24	/	WHITE	1.0			
		22	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
		23	/	/	RC PRIMER	-							
	DECK	24	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0		
		25											
	BATTERY ROOMS	26	/	/	RC PRIMER	-							
	BULKHEADS & OVERHEADS	27	29	2	EPOXY-CHAMPION	2.0	26	2	WHITE	2.0	4.0		
	DECKS	28	/	/	PC PRIMER	-							
		29	29	2	EPOXY-CHAMPION	2.0	26	2	RED DECK	2.0	4.0		
	AREAS NOT LISTED SEE SHEET #8 & LINES 1 TO 18	30											
		31											
		32											
	NAVIGATING BRIDGE DECK	33											
	ALL AREAS SEE SHEET #18	34											
	LINES 1 TO 18	35											
		36											

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 1611-7 — SHEET 11

ALT NO	LOCATION	LINE NO	PRIMERS PRINT	NO.	COATS	TYPE	MOFT	FINISH NO.	COATS	COLOR	MOFT	TOTAL MOFT	REMARKS
	INTERIORS CONT	1											
	A & B DECKS-AFT CONT	2											
	BATTERY ROOM	3											
	BULKHEAD, OVERHEAD	4											
	VENT DUCTS & DOORS	5	/	/	RC PRIMER	-							
		6	29	2	EPOXY-CHAMP	2.0	26	2	WHITE	2.0	4.0		
	DECKS	7	/	/	RC PRIMER	-							
		8	29	2	EPOXY-CHAMP	2.0	26	2	RED DECK	2.0	4.0		
		9											
	AREAS NOT LISTED SEE SHEET #8 & LINES 1 TO 18 INC	10											
		11											
		12											
1'	SECOND DECK, FWD OF FRESS. FWD. MACHINERY BOOM AFT	13											
		14											
	FRAME	15	/	/	RC PRIMER	-	24	/	WHITE	1.0			
	BULKHEADS & OVERHEADS	16	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
	DECK	17	/	/	RC PRIMER	-							
		18	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0		
	CARGO HOLD - STEEL BRACE SEE SHEET #19 & 20	19											
		20											
		21											
	UPPER DECK FWD FRESS. - AFT	22											
	BOILER CASINGS DOOR AND	23											
	EXPANSION TRUNK, COL. BRACE	24											
	& TELEPHONE EQUIPMENT ROOM	25											
	BULKHEADS & OVERHEAD	26	/	/	RC PRIMER	-	24	/	WHITE	1.0			
		27	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
	DECK	28	/	/	RC PRIMER								
		29	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0		
		30											
	MAIN ENG. MACHINERY ROOM BULKHEADS & OVERHEADS	31	/	/	RC PRIMER	-	24	/	WHITE	1.0			INTER-COATS OF PRINTING
		32	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		SEE IN FLOOD CHART BOOK
	DECK	33	/	/	PC PRIMER	-							
		34	/	/	PC PRIMER	-							
		35	28	2	RED LEAD	2.0	29	2	RED DECK	2.0	4.0		
		36											

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 1611-8 — SHEET 10

ALT NO	LOCATION	LINE NO	PRIMERS PRINT	NO.	COATS	TYPE	MOFT	FINISH NO.	COATS	COLOR	MOFT	TOTAL MOFT	REMARKS
	INTERIORS CONT	1											
1'	UPPER DECK AFT	2											
	DECK GEAR LOCKER AND	3											
1'	GARBAGE ROOM	4											
1'		5											
	EXPOSED STEEL BULKHEADS & OVERHEADS	6	/	/	RC PRIMER	-	24	/	WHITE	1.0			
		7	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
		8											
1'	DECKS (INC. GARBAGE RM.)	9	/	/	RC PRIMER	-							
		10	28	2	RED LEAD	2.0	29	2	DECK RED	2.0	4.0		
		11											
		12											
1'	GALLEY & SCULLERY	13											
	STAINLESS STEEL SURFACING	14											
	BULKHEADS & CEILING WITH	15											
	NO A FINISH	16											UNPAINTED
		17											
	MISC. EXPOSED STEEL FRAMING	18											
	FOUNDATIONS ETC	19	/	/	RC PRIMER	-	24	/	WHITE	1.0			
		20	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
		21											
	INTERIORS OF PUMP ROOM AND DECK	22											
		23	27	/	ARMY CHARM								
		24											
	STEEL SHELL & OVERHEAD BEFORE INSULATION SEE 28 & CHAMPION	25											
		26											
		27											
	A & B DECKS - AFT	28											
	EXPOSED STEEL & PIPE ROOMS	29											
	BULKHEADS & OVER HEADS	30	/	/	RC PRIMER	-	24	/	WHITE	1.0			
		31	28	2	RED LEAD	2.0	25	/	WHITE	1.0	4.0		
	DECKS	32	/	/	PC PRIMER	1.0							
		33	28	2	RED LEAD	2.0	2	2	RED DECK	2.0	4.0		
		34											
		35											
		36											

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ALT. 9
H-2782 SHT. 10, 11, 12 & 13
BETHLEHEM STEEL CORP. JULY 1974
6X

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-5 — SHEET 14

ALT NO	LOCATION	LINE NO	PRIMERS: COAT	NO.	TYPE	MFT	FINISH: NO.	COAT	COLOR	MFT	TOTAL MFT	REMARKS
	INTERIORS - CONT	1										
	SALT WATER BALLAST TANKS	2										
	FUEL OIL TANKS	3	1	1	AC PRIMER	1.0						
	DOUBLE BOTTOM TANKS	4	1B	1	WHITE	5.0	1A	1	LIGHT BLUE	4.0	9.0	SOLVENT FREE EPOXY FOR S.W. BALLAST
	WATER BALLAST TANKS INCLUDING FERROUS PARTS OF PIPE & MISCELLANEOUS ITEM	5										PRIMER & FINISH AS PER SPEC. & SHEET NOS. LINES NOS 6 TO 15
	SUMPS & CESSPOOLS, ETC.	6										
	FUEL OIL PIPING.	7										
		8										
		9										
		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
	POTABLE WATER & DISTILLED WATER TANKS & FEED WATER	18										
	DOUBLE BOTTOM TANKS	19	1E	2	ZINC DUST -							
	OF 12 EE	20										
		21										
		22										
		23										
	LUBE OIL STORAGE & SETTLING TANKS & LUBE OIL SUMP	24										
	FUEL CLEANING TO MAIN & AUX.	25										
	DISPOSAL PIPING TO FILLING &	26										
	PURIFYING LUBE SYSTEM	27										
		28	2D	1	EM MARINE -							
		29										
		30										
		31										
	BULKHEADS - INTERIOR, ABOVE TRIPLE	32	3B	1	FLAT COAT							
		33										
		34										
	RUDDER HORN - INTERIOR	35	3B	1	FLAT COAT							
	BELOW 45'0" FLAT AFTER TRIM	36										

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-5 — SHEET 15

ALT NO	LOCATION	LINE NO	PRIMERS: COAT	NO.	TYPE	MFT	FINISH: NO.	COAT	COLOR	MFT	TOTAL MFT	REMARKS
	INTERIORS - CONT	1										
	CONTAINER HOLDS	2										
	BULKHEADS & BRACINGS	3	1	/	AC PRIMER	-						
	INCLUDING INTERIOR OF HINGE	4	2B	2	RED LEAD	2.0	2E	2	ALUM GREY	2.0	4.0	
	CORNERS & CREVICES, FULL STRENGTH	5										
	DILUENT SHOULD BE USED	6										
		7										
	BOTTOM OF CONTAINER GUIDES	8	1	/	AC PRIMER	-						FOR PROTECTIVE COATING OF CONTAINER GUIDES SEE SPECIFICATION
		9										
	CONTAINER CELL ENTRY GUIDES	10	1	/	AC PRIMER	-						
		11	2B	1	RED LEAD	2.5	2B	2	YELLOW	2.0	4.5	
		12										
	TANK TOP	13	1	/	AC PRIMER	-						
		14	2B	3.0	RED LEAD	2.0	2B	2	DARK RED	2.0	4.0	
		15										
	ACCESS TO CELL TOP GUIDES	16										
	PASSAGEWAYS, LADDERS, PLATFORMS	17										
	ATTACHED TO CONTAINER HOLDS	18										
	ABOVE 2ND DECK	19										
	BULKHEADS & OVER HEADS	20	1	/	AC PRIMER	-	2A	1	WHITE	1.0		
		21	2B	2	RED LEAD	2.0	2E	1	WHITE	1.0	4.0	
		22										
	DECKS	23	1	/	AC PRIMER	-						
		24	2B	2	RED LEAD	2.0	2B	2	DARK RED	2.0	4.0	
		25										
	CARGO HOLDS	26										
	BULKHEADS & OVER HEADS	27	1	/	AC PRIMER	-						
		28	2B	2	RED LEAD	2.0	2E	2	ALUM GREY	2.0	4.0	
		29										
	DECKS	30	1	/	AC PRIMER	-						
		31	2B	2	RED LEAD	2.0	2B	2	DECK RED	2.0	4.0	
		32										
	CONTAINER & CARGO HOLD CELL WELLS	33	1	/	AC PRIMER	1.0						
		34	2D	1	EPOXIDINE	2.0	3J	1	RED OXIDE	4.0	8.0	(SOLVENT FREE EPOXY)
		35										
		36										

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-4 — SHEET 14

ALT NO	LOCATION	LINE NO	PRIMERS: COAT	NO.	TYPE	MFT	FINISH: NO.	COAT	COLOR	MFT	TOTAL MFT	REMARKS
	INTERIORS - CONT	1										
	MACHINERY SPACES CONT.	2										
	LADDERS	3										
	STRINGERS	4	2B	2	OXID-LEAD	2.0	2A	1	WHITE	1.0		
		5					2E	1	WHITE	1.0	4.0	
	TREADS & HANDRAILS	6	2B	1	RED LEAD	1.0	2D	2	BLACK	2.0	4.0	
		7										
	FLOOR PLATES - ALUMINUM	8										
	UNDERSIDE	9	3B	2	VARNISH				WHITE			
	TOPSIDES	10			HOUSE				PAINT			CLEAN AS NECESSARY
		11										
	HAND RAILS	12	2B	2	RED LEAD	2.0	2D	2	BLACK	2.0	4.0	
		13										
	BOILER CASINGS & UPTAKES INCLUDING INTERCOSTAL OF	14										
	CASINGS STACK	15					3E	3	ALUMINUM	3.0	3.0	HOT RESISTIVE
		16										
	MAIN & AUXILIARY MACHINERY	17										
	REAR CASE FLG.*	18					3E	3	ALUMINUM	3.0	3.0	HEAT RESISTIVE
		19										
	REAR CASE FLG.*	20	2B	2	RED LEAD	3.0	3I	2	GUM (CASE)	3.0		PRIMERS BY MACHINERY VENDORS
		21										
	WALKWAYS & PLATFORMS ABOVE & LOWER LEVEL (ALUMINUM)	22										
	UNDER SIDE	23										
		24	3D	2	ZINC CHROMATE		2A	1	WHITE			
		25					2E	1	WHITE			
	TOP SIDE	26										
		27			NONE				NONE			TO BE THOROUGHLY CLEANED
		28										
	GRATING SUPPORTS (STEEL)	29										
	MAIN CONTACTBARS	30	3F	2	ZINC CHROMATE							
		31										
	ENGINEERS	32	2B	2	RED LEAD		2A	1	WHITE			
		33					2E	1	WHITE			
		34										
		35										
		36										

HULL NO 4639-40 — PAINT SCHEDULE — JOB NO 161-4 — SHEET 13

ALT NO	LOCATION	LINE NO	PRIMERS: COAT	NO.	TYPE	MFT	FINISH: NO.	COAT	COLOR	MFT	TOTAL MFT	REMARKS
	INTERIORS CONT	1										
	MACHINERY SPACES	2										
	ENGINE ROOM, ENGINE ROOM ACCESS TO ABOVE 2ND LINE & ENGINEROOMS	3										
		4										
		5										
	ENGINE ROOM, ENGINE ROOM ACCESS TO ABOVE 2ND LINE & ENGINEROOMS	6										
		7										
		8										
		9										
		10										
		11										
		12										
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BETHLEHEM STEEL CORP. JULY 1974
6X

HULL NO 4639, 4640 — PAINT SCHEDULE — JOB NO 161-5 — SHEET 17

ALT NO	LOCATION	LINE NO	PRIMERS: PRODUCT NO.	PRIMERS: COAT NO.	PRIMERS: TYPE	PRIMERS: MDFT	FINISH: COAT NO.	FINISH: COLOR	FINISH: MDFT	TOTAL MDFT	REMARKS
	INTERIOR CONT.	1									
	STORES SPACES - UPPER 2ND & 3RD DECKS FWD TO 260	2	1	1	AC PRIMER	—	2A	WHITE	1.0		
		3	28	2	RED LEAD	2.0	2B	WHITE	1.0	4.0	
		4									
	ROPE STORAGE - 2ND DECK AT STBD	5	1	1	AC PRIMER	—	2A	WHITE	1.0		
		6	28	2	RED LEAD	2.0	2B	WHITE	1.0	4.0	
		7									
1/4	SALT WATER BALLAST PIPING	8									
1/4	VALVES, FERROUS PARTS OF EXCEPTIONS	9									
1/4	RODS, "U" BOLTS, SHIMS AND	10									
1/4	MISC. OF PIPE AND APPURTENANCES	11									
1/4	ROD SUPPORTS	12			HOT DIPPED GALVANIZED (SEE 1.16, OTHER OUTFITS)						
		13									
		14									
		15									
	INTERIOR OF CHAIN LOCKER & CHAIN LOCKER SUMP	16	2	1	AC PRIMER	2.5					
		17	8	1	BITUMASTIC	3.0		NONE		5.5	
		18									
	RUDDER TRUNK-INTERIOR AFTER TRAPEVE	19	1	1	AC PRIMER	—					
		20	28	2	RED LEAD	2.0		NONE		2.0	
		21									
	STEERING GEAR-LOWER BELOW PLATFORM AND SPACE ADJ.	22									
		23	28	1	BLANKET						Option 1
		24									
	RUDDER FRAME AND RUDDER ARMS AFT OF RUDDER STOCK & VOID SPACE BELOW 2ND FLAT AFT OF RUDDER TRUNK	25									
		26									
		27	28	1	FLOATOIL						
		28									
	UNASSIGNED SPACE BETWEEN FR'S 4670 PERP. AFT OF BHD'S & TRUNK	29									
		30	1	1	AC PRIMER	—					
		31	28	2	RED LEAD	2.0		NONE	—	2.0	
		32									
	COFFERDAM-AROUND L.O. SUMP IN INNER BOTTOM	33									
		34	1	1	AC PRIMER						
		35	28	2	RED LEAD	2.0		NONE		2.0	
		36									

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BETHLEHEM STEEL CORP. JULY 1974 6X
H 4639-4640

HULL NO 4639, 4640 — PAINT SCHEDULE — JOB NO 161-5 — SHEET 18

ALT NO	LOCATION	LINE NO	PRIMERS: PRODUCT NO.	PRIMERS: COAT NO.	PRIMERS: TYPE	PRIMERS: MDFT	FINISH: COAT NO.	FINISH: COLOR	FINISH: MDFT	TOTAL MDFT	REMARKS
	INTERIOR CONT.	1									
	TRANSVERSE BOX GIRDERS AT	2	1	1	AC PRIMER	—	2A	WHITE	1.0		
1/4	FR. 150 & 151 @ LOWER INTERNAL SURFACES	3	28	2	RED LEAD	2.0	2B	WHITE	1.0	4.0	
	SURFACES ON CONTAINED HULL	4									
	SIDE SHELL SHT #5 SHIFTED 1/2 SHEET (PORT)	5									
		6									
		7									
	SURFACES EXPOSED TO FLOODING SEE SHEET 147 - LINE 14 & 17	8									
		9									
		10									
	TRANSVERSE BOX GIRDERS AT HIGH ENDS BOTTOM & INTERNAL CHAMBERS	11									
		12	1	1	AC PRIMER	—					
		13	28	2	RED LEAD	2.0				2.0	
		14									
	SURFACES ON CONTAINED HULL	15									
	SIDE SHELL SHEET #5 IS SHIFTED 1/2 SHEET (PORT)	16									
		17									
		18									
	SURFACES EXPOSED TO FLOODING SEE SHEET 147 - LINE 14 & 17	19									
		20									
		21									
	- FORE & AFT - 1/2 HOG	22		1	AC PRIMER	—					
		23	28	2	RED LEAD	2.0					
		24									
		25									
		26									
	- FAIRWAY - 1/2 HOG	27		1	AC PRIMER	—					
		28	28	2	RED LEAD	2.0				2.0	
		29									
1	DIELECTRIC SHIELD	30									
2	APPROX. 250 x 200 @ FRONT &	31									
3	STARBOARD SIDE & AFT SIDES	32									
1	OF SIDE (SEE DETAIL 4639-202-15-18)	33	46	2	COAL TAR	3.0	6	BITUMASTIC	1.0		
2		34					7	BITUMASTIC	1.0	5.0	
3		35									
		36									

ME)
DINGS

HOUR

6"

COMPARTMENT	℄	P	S
FUEL OIL			
DEEP TNK. IB 233-246		X	X
WING TNK. 2A 204-227	X		
2B 188-204	X		
3A 176-188	X		
3B 160-176	X		
3C 148-160	X		
4A 136-148	X		
4C 112-120	X		
5A 88-104	X		
5B 72-88	X		
F.O. SETTLING TNK 64-72	X		
TOTAL F.O. TANKS			
LUBE OIL TANKS			
LUBE OIL SUMP 43-50		X	X
L.O. STORAGE 20-24	X	X	
L.O. SETTLING 24-27	X	X	
L.O. GRAVITY TNK. 31-32		X	X
TOTAL LUBE OIL TANKS			

4" "A" 18" 4" 4" 4" 1/2"

F SOUNDING BOARD
"=1'-0"

BILL OF MATERIAL - PER SHIP

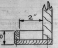
REV	ITEM	NO REQ	DESCRIPTION	MATERIAL	MATERIAL SPEC	DETAIL	REMARKS	REQ NO.	JOB NO
	1	1	SOUNDING BOARD	WATER PROOF PLYWOOD			5'-1" x 3'-4" x 3/4" THICK		
	2	1	CHALK BOX	↓			8" x 5" x 3/8" THICK		
	3	4	1" x 1" x .80 ⌐ x 2" LG.	GALV. STL.			DET. "4-A"		
	4	4	1/4" ϕ CSK. F.H.M. SCR x 1 1/4" LG	↓			20 NC-2		
	5	4	1/4" ϕ HEX NUT				20 NC-2		

ALTERATIONS

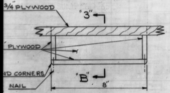
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4/10/72	3	1. BALLAST TANK HEADING DELETED CROSS OUTS P/S. 2. B.B.T. NO 2 DELETED CROSSOUTS (STBD) 3. ADDED D.O. STORAGE TANK 4. MAIN HEADING LINES HEAVIED UP. ABV. ITEMS TO SUIT GGS LTR. 8512/1824/333 DATED MARCH 30, 1972.		4.14.72
2	5/11/72	3	1. ADDED L.O. GRAVITY TNK 31-32 -DEV.	EHC	5.17.72

GENERAL NOTES:

1. LOCATION OF BOARD TO BE AS DIRECTED BY OWNERS REPRESENTIVE.
2. FINISH TO BE AS FOLLOWS:
   A. PANEL TO BE SUITABLY PRIMED & FINISHED WITH TWO (2) COATS OF JET BLACK PAINT.
   B. LETTERING & STRIPING TO BE PAINTED GLOSS WHITE.



SECT. "3-B"
6" = 1'-0"



SECT. "3-A"
DETAIL OF CHALK BOX
(NAIL & GLUE CONSTRUCTED)
6" = 1'-0"

UAO-3974

NO.	PLAN NO.	TITLE
1	H4639-235-1	OUTFITTING LIST

REFERENCE PLANS

HULL	DESIGN	CHARGE
4640		4639
4639		4639

JOB NO. 172

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS SHOWN — DATE 10 MARCH 1972
DRAWN J. MULLEN — APPROVED
TRACED [signature] — APPROVED
CHECKED [signature] — APPROVED RA Jacobson

PLAN NO. H 4639-172-10 — ALT. NO. 2

SOUNDING BOARD MARKINGS

APPROVAL LETTERS

HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	3-30-72				
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

DATE OF ISSUE

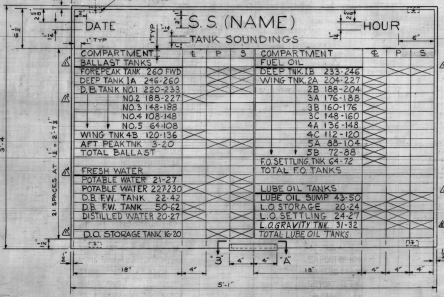
ALTERATION	-	1	2	2'	
ENGINEERING DISTRIBUTION	3/10/72	4/17/72	4/20/72	5/18/72	
MAIL	OWNERS 8/INSP.	4	3		3
	AMERICAN BUREAU				
	LLOYD'S R.S.				
	U.S.M.A. 8/INSP.	2		2	
	U.S. NAVY				
	U.S.C.G.				
	JOINER CONT'R.				
INSPECTION	OWNER'S INSP.				
	AM. BU. INSP.				
	LLOYD'S INSP.				
	U.S.M.A. INSP.				
	U.S. NAVY INSP.				
	U.S.C.G. INSP.				
OFFICE	HULL DRAFT.-21		1	1	
	MACH. DRAFT.-22		1	1	
	ELEC. DRAFT.-23		1	1	
	OUTFIT. DRAFT.-25				
	ESTIMATING				
	C.D. SCHAUB		1	1	
MISC.	PRODUCTION (BCD)				
	ORDER DEPT.				
	JOINER CONT. YARD				
TOTAL ENG'R. DIST.		4	5	4	9
YARD DISTRIBUTION		5/1/72	5/23/72		
YARD	CPM PLAN'G	1	1		
	A.J. DALBY	3	3		
	PIECE RATE-11	1	1		
	TEST DEPARTMENT				
	PLANNING				
	GROUND ASSEMBLY				
STRUCTURAL	NO. WAY				
	NO. WAY				
	NO. WAY				
	NO. WAY				
	STRUCT. SUPER.				
	OPTICAL DETAIL-45				
	WET DOCK				
MACH'Y & OUTFIT.	PIPE SHOP-52				
	OUTFIT. #1 PIER				
	PIPE DRAFT.-52				
	BOILER SHOP-58				
	OUTSIDE MACH.-60	2	2		
	Q-MATIC	2	2		
	ELECTRIC SHOP-70				
	SHEET MET. SHOP-74	2	2		
	COPPER SHOP-51				
	PAINT SHOP-75	1	1		
OTHER	WELDING				
	CARPENTER SHOP	1	1		
	MOLD LOFT-41				
	BRACKET SHOP				
	ORDER DEPT.	1	1		
TOTAL YARD DIST.		16	14		

3 2 1

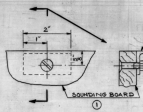
H-279 ____ SQ.FT.

H4639-172-10
SOUNDING BOARD MARKINGS

1
H-4639-172-10
ALT. 2
H-279
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

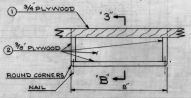


DETAIL OF SOUNDING BOARD
3"=1'-0"



DETAIL "4A"
DETAIL OF MOUNTING CLIP
FULL SIZE

SECT. "3-B"
6"=1'-0"



SECT. "3-A"
DETAIL OF CHALK BOX (NAILED & GLUE CONSTRUCTED)
6"=1'-0"

BILL OF MATERIAL - PER SHIP

POSITION NO.	QUAN.	DESCRIPTION	MATERIAL SPEC. GRADE	MATERIAL SIZE	DETAIL	REMARKS
	1	1	SOUNDING BOARD			5-1/2 X 3-4" X 3/4 THICK
	2	1	CHALK BOX	"	"	8"X 8" X 3/4 THICK
	3	4	1"X1"X 60" F.B. LG.	GALV STL.		DET. "4-A"
	4	4	1/4 ø FHMS SCR. LG			2 ONE-2
	5	4	1/4 ø HEX NUT			2 ONE-2

GENERAL NOTES:

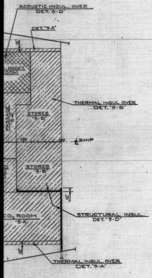
1. LOCATION OF BOARD TO BE AS DIRECTED BY OWNERS REPRESENTATIVE.
2. FINISH TO BE AS FOLLOWS:
   A. PANEL TO BE SUITABLY PRIMED & FINISHED WITH TWO (2) COATS OF JET BLACK PAINT.
   B. LETTERING & STRIPING TO BE PAINTED GLOSS WHITE.

H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
8X

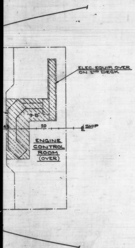
H-279
H-279-1, 172-10
ALT. 2

H4639-2881 OUTFITTING LIST
NO. PLAN NO. TITLE
REFERENCE PLAN

4 3 2 1



UPPER DK. FWD.
1/8" = 1'-0"



PLAN - 28'-6" FLAT
1/8" = 1'-0"

BILL OF MATERIAL - QUANTITIES FOR ONE SHIP

ITEM	QUANTITY	MATERIAL	DESCRIPTION	REMARKS	SOURCE
Δ1 1	3400 LIN. FT.	FIBROUS GLASS	INSULATION - 2" THK. x 30" WIDE	.75# DENSITY, GEN. NOTE #1	21-39063
Δ1 2	300 LIN. FT.	↓	INSULATION - 3" THK.	↓	21-39063
Δ1 3	600 LIN. FT.	↓	INSULATION - 4" THK. x 30" WIDE	↓	21-39063
4					
5					
6	11,000	STEEL	#10 GA. WELDING PINS LG.: 2"	NELSON 2P2	21-39064-A
Δ1 7	5,000	↓	LG.: 4"	↓	
8	1,000		LG.: 6"		
Δ1 9	16,000	ZINC PLT. STL.	SPEED CLIPS - 2" DIA.		↓
10	186	GALV. STL.	#22 GA. SHEET STEEL 48"x120"		PG. #800-A
11	35	↓	#18 GA. 48"x120"		PG. #800-A
Δ1 12	194		#16 GA. 48"x120"		PG. #800-A
13	220	GALV. STL.	#14 GA. 48"x120"		PG. #800-A
14	31	CRES. STL.	#20 GA. 36"x96"		21-39103-G
15	48	↓	#16 GA. 48"x120"		21-39103-G
16	3		#14 GA. 48"x120"		21-39103-G
Δ1 17	68	GALV. STL.	#18 GA. PERFORATED SHT. STL.	36"x120" W/.095" ϕ HOLES 33 HOLES PER SQ. IN.	21-39103-G
18	24	STEEL	FLAT BAR - 4"x1/4"x20'-0"		PG. #800-B
19	94	GALV. STL.	FLAT BAR - 1"x1/8"x20'-0"		PG. #800-B
20	40,000	CAD. PLT. STL.	SELF-TAPPING SCREWS 10-24x1/2"	TYPE "F" SLOTTED TRUSS HEAD	21-39064
21	4,000	CRES. STL.	SELF-TAPPING SCREWS 8-32x1/2"	TYPE "F" SLOTTED TRUSS HEAD	21-39064
22	18 GAL.		SEAM COMPOUND	PRESTITE No 579, GEN. NOTE #3	21-39063-B
Δ1 23	34	GALV. STL.	#18 GA. PERFORATED SHT. STL.	48"x120" W/.095" ϕ HOLES 33 HOLES PER SQ. IN.	21-39103-G
Δ1 24	800 LIN. FT.	COMM. GRADE	ASBESTOS PAPER - 36" WIDE	J-M 32 LB. (GEN NOTE #3)	21-39063-A

GENERAL NOTES

1. INSULATION, ITEMS 1, 2 & 3 TO BE U.S.C.G. APPROVED INCOMBUSTIBLE MATERIALS: APP'L. No 164.009/72/3.
2. ALL LAP JOINTS IN GALV. STEEL SHEATHING, EXCEPT PERFORATED TYPE, ARE TO BE SEALED WITH SEAM COMPOUND, ITEM #22
3. Δ1 ASBESTOS PAPER, ITEM No 24, TO BE U.S.C.G. APP'L. No 164.009/26/0

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	9/1/71	2,5 6,11	1) ACOUSTIC INSUL. ADDED AROUND ENGINE CASING BHDS. BETWEEN "B" & "C" DKS. AFT. PLAN VIEW, SECT 7-A & B/M ALTERED DET. "11-A" & GEN NOTE #3 ADDED.	RLW	
2	11/9/72	5	1) SHEATHING ADDED IN DK. LKR. ON "B" DK. AFT	RJK	

REFERENCE PLANS

NO.	PLAN NO.	TITLE
4	E-4639-202-20-15	LOCATION OF ELEC. EQUIP. - ENG. CONT. RM.
3	H-4639-234-1	DECK COVERING SCHEDULE
2	HOPEMAN DWG.	JOINER INSUL. - ARR'GT. & DETAILS
1	H-4639-236-4	FDNS. FOR COMMISSARY EQUIP.

HULL	DESIGN	CHARGE
4640		10-4639
4639		10-4639

JOB NO. 176

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED DATE 6-2-71
DRAWN R.L. WEBSTER APPROVED
TRACED APPROVED
CHECKED RJK APPROVED

PLAN NO. H-4639-176-1 ALT. NO. 2'

INSULATION & SHEATHING

APPROVAL LETTERS					
HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	9-30-71				
A.B.S.					
U.S.C.G.	7-7-71				
LLOYD'S R.S.					
U.S.P.H.S.					

	DATE OF ISSUE		
ALTERATION	0	1	2
ENGINEERING DISTRIBUTION	6-2-71	9-1-71	11-9-72
MAIL: OWNERS	5	5	5
AMERICAN BUREAU			
LLOYD'S R.S.			
U.S.M.A.			
U.S NAVY			
U.S.C.G.	3	3	
JOINER CONT'R.	P	1	1
INSPECTION: OWNER'S INSP.			
AM. BU. INSP.			
LLOYD'S INSP.			
U.S.M.A. INSP.			
U.S. NAVY INSP.			
U.S.C.G. INSP.			
OFFICE: HULL DRAFT.-21	P	1	1
MACH. DRAFT.-22	P	1	1
ELEC. DRAFT.-23	P	1	1
OUTFIT. DRAFT.-25			
ESTIMATING			
R.J. KIPP	1	1	1
MISC.: PRODUCTION (BCD)			
ORDER DEPT.			
JOINER CONT. YARD			
TOTAL ENG'R. DIST.	13	13	10
YARD DISTRIBUTION	10-23-71	11-10-74	
YARD: PLANK	1	1	
A.J. DALEY	3	3	
PIECE RATE-11	1	1	
TEST DEPARTMENT			
STRUC. PLANNING			
GROUND ASSEMBLY	4	4	
35 DEPT.	2	2	
STRUCTURAL: NO. WAY			
NO. WAY			
NO. WAY			
NO. WAY			
STRUCT. SUPER.	2	2	
OPTICAL DETAIL-45	2	2	
WET DOCK			
MACH'Y & OUTFIT.: PIPE SHOP-52	2	2	
OUTFIT. #1 PIER			
PIPE DRAFT.-52	2	2	
BOILER SHOP-58			
OUTSIDE MACH.-60	1	1	
ELECTRIC SHOP-70	2	2	
SHEET MET. SHOP-74	3	3	
COPPER SHOP-51			
PAINT SHOP-75	2	2	
WELDING	1	1	
OTHER: MOLD LOFT-41	1	1	
BRACKET SHOP			
ORDER DEPT.	1	1	
TOTAL YARD DIST.	30	30	

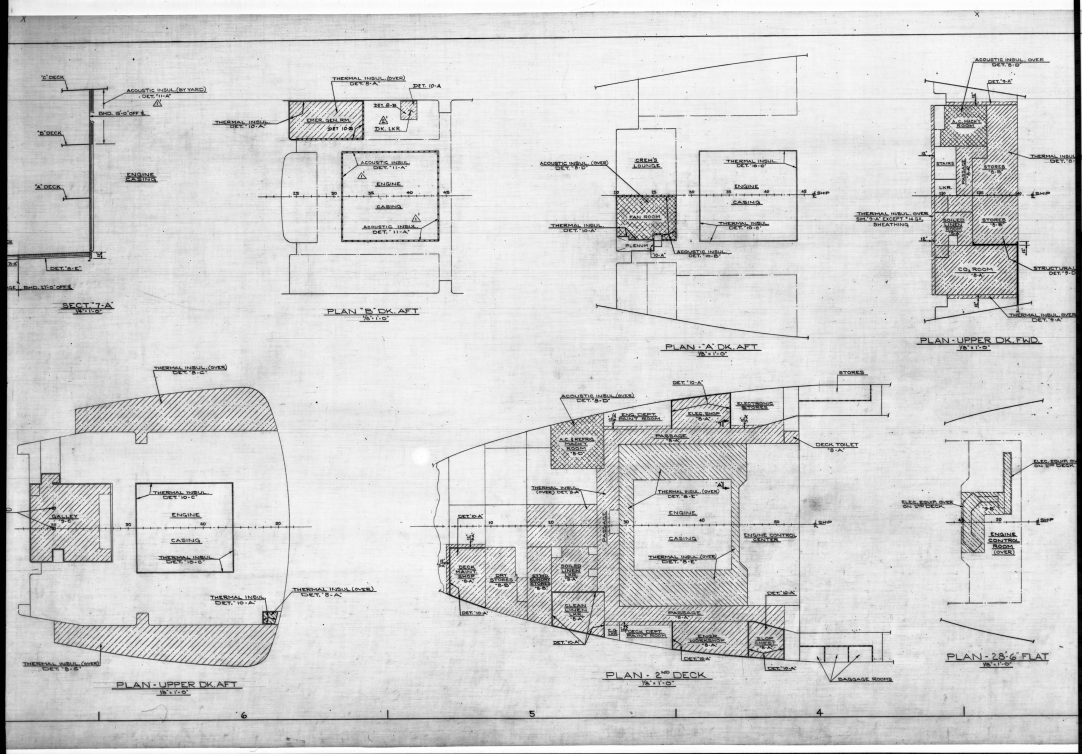
4639, 40-ALT. 2

H-280 ____ SQ.FT.

3 2 1

H-4639-176-1

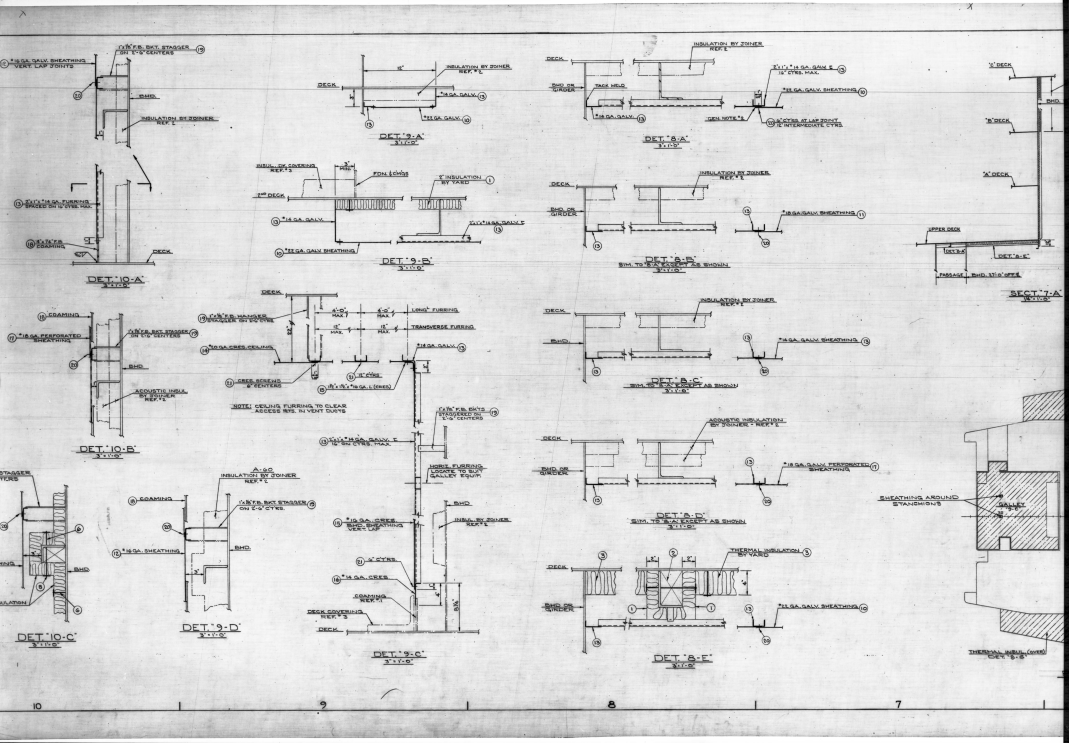
1
H-4639-176-1 ALT. 2
H-280
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



2

H-4639-176-1
ALT. 2
H-290

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

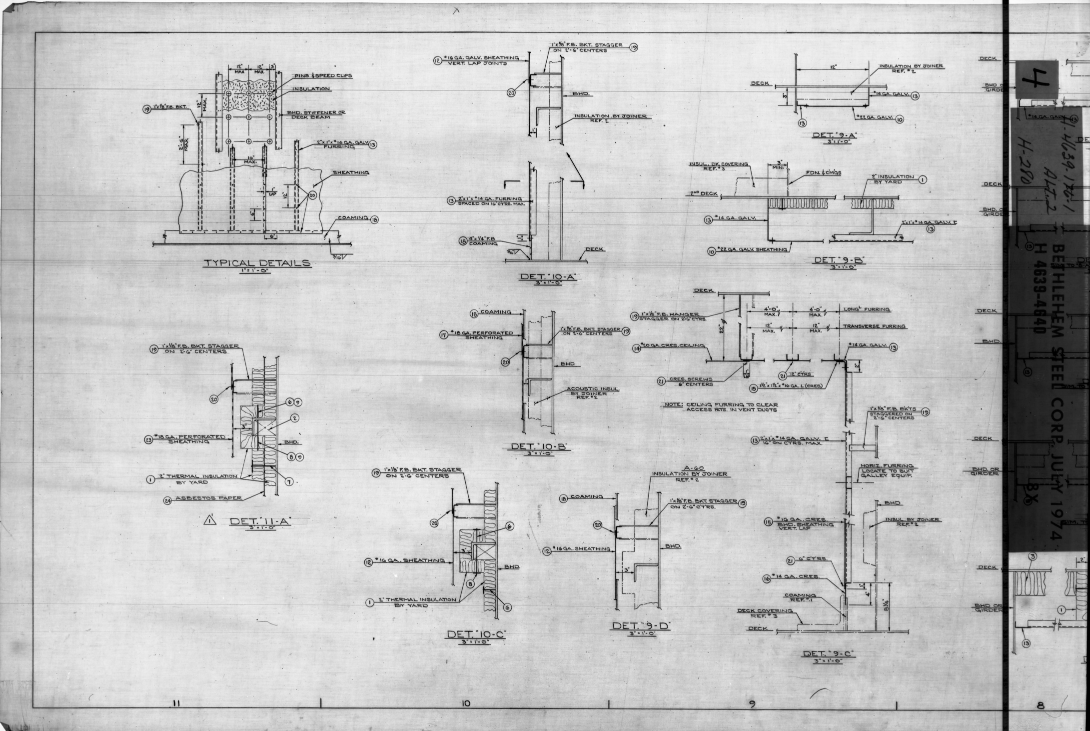


3

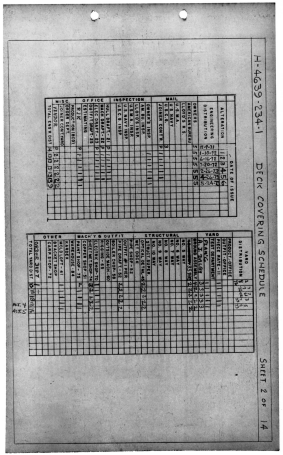
H-4639-176-1
ALT. 2
H-4640

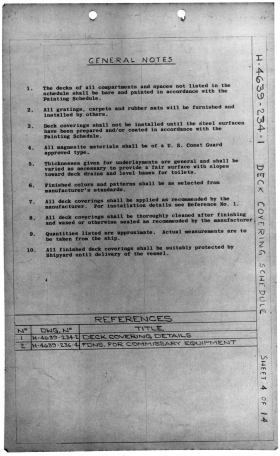
BETHLEHEM STEEL CORP. JUL 1974
H 4639-4640

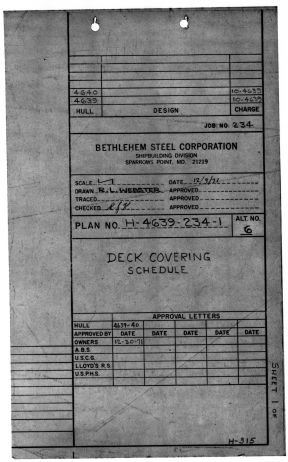
8X

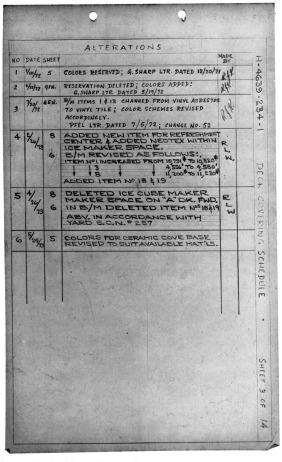


PINS & SPEED CLIPS
INSULATION
BHD. STIFFENER OR DECK BEAM
1"x1/8" F.B. BKT.
12" MAX
12" MAX
3"
2'-6" MAX
16" MAX.
2"x1"x#14 GA. GALV. FURRING
SHEATHING
1" LAP
COAMING
3/16
TYPICAL DETAILS
1" = 1'-0"
#16 GA. GALV. SHEATHING VERT. LAP JOINTS
1"x1/8" F.B. BKT. STAGGER ON 2'-6" CENTERS
BHD.
INSULATION BY JOINER REF. 2
2"x1"x#14 GA. FURRING SPACED ON 16" CTRS. MAX.
4"x1/4" F.B COAMING
DECK
DET. "10-A"
3" = 1'-0"
INSULATION BY JOINER REF. #2
DECK
#14 GA. GALV.
#22 GA. GALV.
DET. "9-A"
3" = 1'-0"
INSUL. DK. COVERING REF. #3
3" MIN.
FDN. & CMGS
2ND DECK
2" INSULATION BY YARD
#14 GA. GALV.
2"x1"x#14 GA. GALV. [
#22 GA. GALV. SHEATHING
DET. "9-B"
3" = 1'-0"
COAMING
#18 GA. PERFORATED SHEATHING
1"x1/8" F.B. BKT. STAGGER ON 2'-6" CENTERS
BHD.
ACOUSTIC INSUL. BY JOINER REF. #2
DET. "10-B"
3" = 1'-0"
DECK
1"x1/8" F.B. HANGER STAGGER ON 2'-6" CTRS.
4'-0" MAX.
LONG'L FURRING
12" MAX.
TRANSVERSE FURRING
#20 GA. CRES. CEILING
#14 GA. GALV.
CRES. SCREWS 6" CENTERS
12" CTRS
1 1/2" x 1 1/2" x #16 GA. L (CRES.)
NOTE: CEILING FURRING TO CLEAR ACCESS RTS. IN VENT DUCTS
1"x1/8" F.B. BK'TS STAGGERED ON 2'-6" CENTERS
2"x1"x#14 GA. GALV. [16" ON CTRS. MAX.
HORIZ. FURRING LOCATE TO SUIT GALLEY EQUIP.
BHD
#16 GA. CRES. BHD. SHEATHING VERT. LAP
INSUL. BY JOINER REF. #2
6" C'T'RS.
#14 GA. CRES.
COAMING REF. #1
DECK COVERING REF. #3
DECK
8 1/4"
DET. "9-C"
3" = 1'-0"
1"x1/8" F.B. BKT. STAGGER ON 2'-6" CENTERS
#18 GA. PERFORATED SHEATHING
BHD.
2" THERMAL INSULATION BY YARD
ASBESTOS PAPER
DET. "11-A"
3" = 1'-0"
1"x1/8" F.B. BKT. STAGGER ON 2'-6" CENTERS
#16 GA. SHEATHING
BHD.
2" THERMAL INSULATION BY YARD
DET. "10-C"
3" = 1'-0"
A-60 INSULATION BY JOINER REF. #2
COAMING
1"x1/8" F.B. BKT. STAGGER ON 2'-6" C'T'RS.
#16 GA. SHEATHING
BHD.
DET. "9-D"
3" = 1'-0"
11
10
9
8
DECK
BHD OR GIRDER
BHD.
SIM. TO
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
4









BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X
H-4639-234-1
47.6
H-315
SH. 1, 2, 3, 4

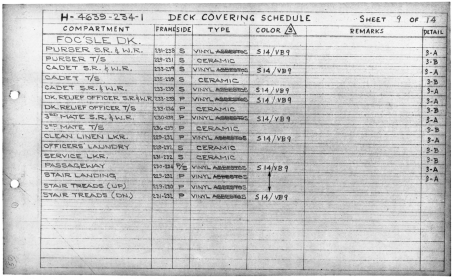
H-4639-234-1 DECK COVERING SCHEDULE SHEET 5 OF 14

COLOR SCHEMES

Nº	DESCRIPTION
⚠ S14/VB9	VINYL PLASTICS INC # S-14 TAN, WITH FLINTKOTE # VB-9 DARK BROWN BASE
⚠ S13/VB7	#S-13 BEIGE, WITH FLINTKOTE # VB-7 BROWN BASE
⚠ S18/VB12	# S-18 GREEN, WITH FLINTKOTE # VB-12 BAYBERRY BASE
⚠ S17/VB5	# S-17 YELLOW, WITH FLINTKOTE # VB-5 CREAM BASE
771	RCA FLEXFLOOR # 771, WITH FLINTKOTE # VB-9 DARK BROWN BASE
ALL CERAMIC ⚠	KEYSTONE RIDGEWAY 1" × 1" MOSAIC, ½ GOLD DUST, ½ BROWN, ½ MOTTLED LIGHT BROWN WITH COVE BASE AS FOLLOWS: HULL 4639 - SUMMITVILLE "4030" SILVER GLOUD" IN FORWARD HOUSE & LAUNDRIES, ELSEWHERE MONARCH Nº A-3410 "SPICE" HULL 4640 - MONARCH Nº A-3410 "SPICE" THROUGHOUT
ALL QUARRY	MURRAY "GOLDEN GLOW" ABRASIVE NON-SLIP ½"GOLDEN GLOW" COVE BASE

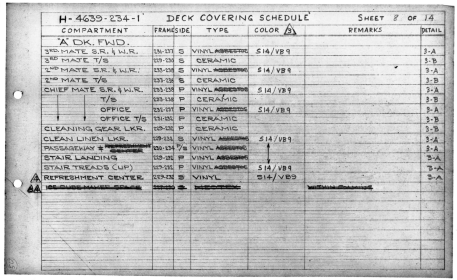
H-4639-234-1
H-315 Sht. 5
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

H-4639-234-1
H-315 Sht. 6,7,8,9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



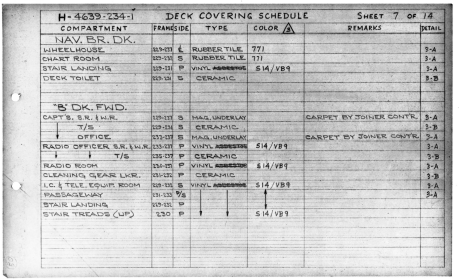
H-4639-234-1 DECK COVERING SCHEDULE SHEET 9 OF 14

COMPARTMENT	FRAME	SIDE	TYPE	COLOR A	REMARKS	DETAIL
FO'SLE DK.						
PURSER S.R. & W.R.	139-139	S	VINYL ~~ASBESTOS~~	S14/VB9		3-A
PURSER T/S	139-131	S	CERAMIC			3-B
CADET S.R. & W.R.	133-139	S	VINYL ~~ASBESTOS~~	S14/VB9		3-A
CADET T/S	133-139	S	CERAMIC			3-B
CADET S.R. & W.R.	133-139	S	VINYL ~~ASBESTOS~~	S14/VB9		3-A
DK. RELIEF OFFICER S.R. & W.R.	133-133	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
DK. RELIEF OFFICER T/S	133-136	P	CERAMIC			3-B
3RD MATE S.R. & W.R.	130-139	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
3RD MATE T/S	136-127	P	CERAMIC			3-B
CLEAN LINEN LKR.	129-131	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
OFFICERS LAUNDRY	129-131	S	CERAMIC			3-B
SERVICE LKR.	139-131	S	CERAMIC			3-B
PASSAGEWAY	139-134	P/S	VINYL ~~ASBESTOS~~	S14/VB9		3-A
STAIR LANDING	123-131	P	VINYL ~~ASBESTOS~~			3-A
STAIR TREADS (UP)	123-130	P	VINYL ~~ASBESTOS~~			
STAIR TREADS (DN.)	131-131	P	VINYL ~~ASBESTOS~~	S14/VB9		



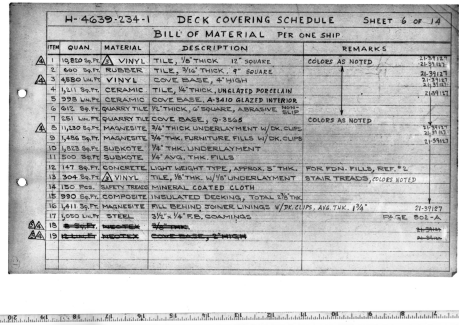
H-4639-234-1 DECK COVERING SCHEDULE SHEET 8 OF 14

COMPARTMENT	FRAME	SIDE	TYPE	COLOR A	REMARKS	DETAIL
A DK. FWD.						
3RD MATE S.R. & W.R.	136-137	S	VINYL ~~ASBESTOS~~	S14/VB9		3-A
3RD MATE T/S	137-136	S	CERAMIC			3-B
2ND MATE S.R. & W.R.	133-136	S	VINYL ~~ASBESTOS~~			3-A
2ND MATE T/S	133-136	S	CERAMIC			3-B
CHIEF MATE S.R. & W.R.	133-139	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
T/S	133-136	P	CERAMIC			3-B
OFFICE	131-137	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
OFFICE T/S	131-131	P	CERAMIC			3-B
CLEANING GEAR LKR.	129-131	P	CERAMIC			3-B
CLEAN LINEN LKR.	129-133	S	VINYL ~~ASBESTOS~~	S14/VB9		3-A
PASSAGEWAY & ~~CENTER~~	130-134	T/S	VINYL ~~ASBESTOS~~			3-A
STAIR LANDING	123-131	P	VINYL ~~ASBESTOS~~			3-A
STAIR TREADS (UP)	127-131	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
A REFRESHMENT CENTER	133-136	S	VINYL	S14/VB9		3-A
~~AA BY-PASS MAIN DECK~~	~~133-136~~	~~S~~	~~WATERTIGHT~~		~~WELDED CONNECT~~	



H-4639-234-1 DECK COVERING SCHEDULE SHEET 7 OF 14

COMPARTMENT	FRAME	SIDE	TYPE	COLOR A	REMARKS	DETAIL
NAV. BR. DK.						
WHEELHOUSE	139-139	C	RUBBER TILE	771		3-A
CHART ROOM	139-139	S	RUBBER TILE	771		3-A
STAIR LANDING	139-131	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
DECK TOILET	133-131	S	CERAMIC			3-B
"B" DK. FWD.						
CAPT'S. S.R. & W.R.	139-131	S	MAS. UNDERLAY		CARPET BY JOINER CONT'R.	3-A
T/S	139-134	S	CERAMIC			3-B
OFFICE	137-131	S	MAS. UNDERLAY		CARPET BY JOINER CONT'R.	3-A
RADIO OFFICER S.R. & W.R.	133-131	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
T/S	133-137	P	CERAMIC			3-B
RADIO ROOM	134-131	P	VINYL ~~ASBESTOS~~	S14/VB9		3-A
CLEANING GEAR LKR.	131-129	P	CERAMIC			3-B
I.C. & TELE. EQUIP. ROOM	128-131	S	VINYL ~~ASBESTOS~~	S14/VB9		3-A
PASSAGEWAY	131-133	P/S				3-A
STAIR LANDING	129-131	P				
STAIR TREADS (UP)	130	P		S14/VB9		



H-4639-234-1 DECK COVERING SCHEDULE SHEET 6 OF 14

BILL OF MATERIAL PER ONE SHIP

ITM	QUAN.	MATERIAL	DESCRIPTION	REMARKS	
A 1	16,818 Sq.Ft.	A VINYL	TILE, 1/8" THICK 12" SQUARE	COLORS AS NOTED	21-31-187 21-31-183
2	600 Sq.Ft.	RUBBER	TILE, 3/16" THICK, 9" SQUARE		21-31-187
A 3	4680 Lin.Ft.	VINYL	COVE BASE, 4" HIGH		21-31-187 21-31-183
4	1,111 Sq.Ft.	CERAMIC	TILE, 1/4" THICK, UNGLAZED PORCELAIN		21-31-183
5	998 Lin.Ft.	CERAMIC	COVE BASE, A-3410 GLAZED INTERIOR		
6	612 Sq.Ft.	QUARRY TILE	1" THICK, 6" SQUARE, ABRASIVE ~~NON-SLIP~~		
7	251 Lin.Ft.	QUARRY TILE	COVE BASE, 6-3568	COLORS AS NOTED	21-31-187 21-31-183
A 8	1,230 Sq.Ft.	MAGNESITE	3/4" THICK UNDERLAYMENT W/DK. CLIPS		
9	1,486 Sq.Ft.	MAGNESITE	3/8" THK. FURNITURE FILLS W/DK. CLIPS		21-59-183
10	1,813 Sq.Ft.	SUBKOTE	1/8" THK. UNDERLAYMENT		
11	800 Sq.Ft.	SUBKOTE	1/4" AVG. THK. FILLS		
12	147 Sq.Ft.	CONCRETE	LIGHT WEIGHT TYPE, APPROX. 5" THK.	FOR FDN. FILLS, REF. #2	
13	304 Sq.Ft.	A VINYL	TILE, 1/8" THK. W/1/8" UNDERLAYMENT	STAIR TREADS, RISERS NOTED	
14	150 Pcs.	SAFETY TREAD	MINERAL COATED CLOTH		
15	990 Sq.Ft.	COMPOSITE	INSULATED DECKING, TOTAL 2 5/8" THK.		
16	1,411 Sq.Ft.	MAGNESITE	FILL BEHIND JOINER LININGS W/DK. CLIPS, AVG. THK. 1 3/4"		21-59183
17	1,050 Lin.Ft.	STEEL	3/8" x 1/4" F.B. COAMINGS		PAGE 801-A
AA 18	~~9 Sq.Ft.~~	~~WATERTIGHT~~	~~3/8" THICK~~		~~21-59183~~ ~~21-59183~~
AA 19	~~61 Lin.Ft.~~	~~NEOPRENE~~	~~COVE BASE, 4" HIGH~~		

H-4639-234-1
ALT-6
H-315 SHT. 10, 11, 12, 13
H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X

H-4639-234-1 DECK COVERING SCHEDULE — SHEET 13 OF 14

COMPARTMENT	FRAME	SIDE	TYPE	COLOR (A)	REMARKS	DETAIL
UPPER DK. AFT						
2ND COOK/BAKER S.R.	45-51	P	VINYL ASBESTOS	S18/VB12		
T/S	45-49	P	CERAMIC			3-A
CHIEF COOK	45-51	P	VINYL ASBESTOS	S18/VB12		3-A
CHIEF STWD. S.R. & W.R.	45-50	P	VINYL ASBESTOS	S18/VB12		3-A
T/S	45-47	P	CERAMIC			3-A
CLEANING GEAR LKR.	45-44	P	CERAMIC			3-B
SHIP'S OFFICE	45-45	P	VINYL ASBESTOS	S18/VB12		3-B
HOSPITAL	37-41	P	VINYL ASBESTOS	S18/VB12		3-A
T/S	36-37	P	CERAMIC			3-A
OFFICERS' DECK TOILET	33-37	P	CERAMIC			3-B
PURSER'S OFFICE	33-37	P	VINYL ASBESTOS	S18/VB12		2-B
OFFICERS DINING ROOM	11-31	P	VINYL ASBESTOS	S18/VB12		3-A
GARBAGE ROOM	18-21	P	QUARRY TILE	S18/VB2	MDL 4639 ONLY HULL 4640 ONLY	3-A
GALLEY & PANTRY	16-28	P	QUARRY TILE			3-C
ENGINE DEPT. MESSROOM	16-24	S	VINYL ASBESTOS	S13/VB7		3-C
DECK DEPT. MESSROOM	16-31	S	VINYL ASBESTOS	S13/VB7		3-A
MESSMAN N° 5 S.R.	33-37	S	VINYL ASBESTOS	S18/VB12		3-A
	34-37	S	CERAMIC			3-A
MESSMAN N°4 S.R.	37-41	S	VINYL ASBESTOS	S18/VB12		3-A
MESSMAN N°3 S.R.	41-45	S	VINYL ASBESTOS	S18/VB12		2-A
T/S	45-47	S	CERAMIC			3-A
MESSMAN N°2 S.R.	45-50	S	VINYL ASBESTOS	S18/VB12		3-A
MESSMAN N°1 S.R.	45-51	S	VINYL ASBESTOS	S18/VB12		3-A

H-4639-234-1 DECK COVERING SCHEDULE — SHEET 12 OF 14

COMPARTMENT	FRAME	SIDE	TYPE	COLOR (A)	REMARKS	DETAIL
"A" DK. AFT (CONT'D)						
T/S	34-36	S	CERAMIC			
A.B. SEAMEN N° 5 S.R.	33-38	S	VINYL ASBESTOS	S18/VB12		3-B
A.B. SEAMEN N° 4 S.R.	38-41	S	VINYL ASBESTOS	S18/VB12		2-A
T/S	40-42	S	CERAMIC			3-A
A.B. SEAMEN N° 3 S.R.	41-44	S	VINYL ASBESTOS	S18/VB12		3-B
E.S.S.N.'s S.R.	44-45	S	VINYL ASBESTOS	S18/VB12		2-A
T/S	44-47	S	CERAMIC			3-A
DECK. MAINT. S.R.	45-51	S	VINYL ASBESTOS	S18/VB12		3-A
T/S	47-51	S	CERAMIC			3-A
CARPENTER S.R.	45-51	S	VINYL ASBESTOS	S18/VB12		3-B
A.B. SEAMEN N° 2 S.R.	45-51	S	VINYL ASBESTOS	S18/VB12		3-A
CREW LAUNDRY	31-33	S	CERAMIC			3-A
CLEANING GEAR LKR.	33-41	S	CERAMIC			3-B
OFFICERS' PANTRY & LOCKER	41-44	P	VINYL ASBESTOS	S18/VB12		3-B
CLEAN LINEN LKR.	35-41	P	VINYL ASBESTOS			3-A
BOILED LINEN LKR.	30-35	P	VINYL ASBESTOS			
BOSN'S STORES	31-35	P	VINYL ASBESTOS			
PASSAGEWAYS	13-45	7/8	VINYL ASBESTOS	S18/VB12		
STAIR LANDING	18-21	P	VINYL ASBESTOS	S14/VB9		
STAIR TREADS (UP)	18-21	7/8	VINYL ASBESTOS	S14/VB9		2-A

H-4639-234-1 DECK COVERING SCHEDULE — SHEET 11 OF 14

COMPARTMENT	FRAME	SIDE	TYPE	COLOR (A)	REMARKS	DETAIL
"A" DK. AFT						
A.B. SEAMEN N° 1 S.R.	45-51	P	VINYL ASBESTOS	S18/VB12		
T/S	45-49	℄	CERAMIC			3-A
REEFER MAINT. S.R.	45-51	P	VINYL ASBESTOS	S18/VB12		3-B
T/S	47-51	P	CERAMIC			3-A
1ST ELECTRICIAN S.R.	45-51	P	VINYL ASBESTOS	S18/VB12		3-B
CHIEF ELECTRICIAN S.R.	44-49	P	VINYL ASBESTOS	S18/VB12		3-A
T/S	44-47	P	CERAMIC			3-A
UNLIC. JR. "4 S.R.	41-44	P	VINYL ASBESTOS	S18/VB12		3-B
T/S	40-42	P	CERAMIC			3-A
UNLIC. JR. "3 S.R.	38-41	P	VINYL ASBESTOS	S18/VB12		3-B
UNLIC. JR. "2 E.R.	33-38	P	VINYL ASBESTOS	S18/VB12		2-A
T/S	34-36	P	CERAMIC			3-A
UNLIC. JR. "1 E.R.	31-33	P	VINYL ASBESTOS	S18/VB12		3-B
WIPER "2 S.R.	28-31	P	VINYL ASBESTOS	S18/VB12		3-A
T/S	26-28	P	CERAMIC			3-A
WIPER "1 S.R.	23-28	P	VINYL ASBESTOS	S18/VB12		3-B
CREW'S LOUNGE	20-28	P	VINYL ASBESTOS	S13/VB7		3-A
A.B. SEAMEN "5 S.R.	20-24	S	VINYL ASBESTOS	S18/VB12		2-A
A.B. SEAMEN "6 T/S	20-21	S	CERAMIC			3-A
A.B./ORD. SEAMEN "3 S.R.	24-28	S	VINYL ASBESTOS	S18/VB12		3-B
T/S	27-28	S	CERAMIC			3-A
A.B./ORD. SEAMEN "2 S.R.	28-31	S	VINYL ASBESTOS	S18/VB12		2-B
A.B./ORD. SEAMEN "1 E.R.	31-33	S	VINYL ASBESTOS	S18/VB12		3-A
						3-A

H-4639-234-1 DECK COVERING SCHEDULE — SHEET 10 OF 14

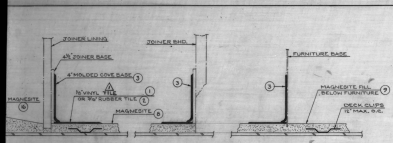
COMPARTMENT	FRAME	SIDE	TYPE	COLOR (A)	REMARKS	DETAIL
"B" DK. AFT						
1ST ASST. ENGR. R.R. & W.R.	45-51	P	VINYL ASBESTOS	S14/VB9		
2ND ASST. ENGR. T/S	45-49	℄	CERAMIC			3-A
1ST ASST. ENGR. S.R. & W.R.	45-51	P	VINYL ASBESTOS	S14/VB9		2-B
T/S	47-51	P	CERAMIC			3-A
OFFICE	41-44	P	VINYL ASBESTOS	S14/VB9		2-B
ENGINE RELIEF OFFICER S.R.	34-39	P	VINYL ASBESTOS	S14/VB9		2-A
T/S	39-41	P	CERAMIC			3-A
OFFICERS' LOUNGE	23-28	7/8	VINYL ASBESTOS	S13/VB7		2-B
OFFICERS LAUNDRY	24-28	S	CERAMIC			3-A
3RD ASST. ENGR. R.R. & W.R.	28-33	S	VINYL ASBESTOS	S14/VB9		3-B
"3 T/S	28-28	S	CERAMIC			3-A
"2 S.R. & W.R.	33-37	S	VINYL ASBESTOS	S14/VB9		3-B
"2 T/S	37-39	S	CERAMIC			3-A
"1 E.R. & W.R.	39-44	S	VINYL ASBESTOS	S14/VB9		3-B
"1 T/S	39-39	S	CERAMIC			3-A
CHIEF ENGR. OFFICE	45-50	S	VINYL ASBESTOS	S14/VB9		3-A
S.R. & W.R.	45-51	S	MAS. UNDERLAY		CARPET BY JOINER CONT'R.	3-A
T/S	47-51	S	CERAMIC			3-B
CLEANING GEAR LKR.	45-47	S	CERAMIC			3-B
PASSAGEWAYS	13-45	7/8	VINYL ASBESTOS	S14/VB9		3-A

H-4639-234-1 DECK COVERING SCHEDULE Sheet 14 of 14

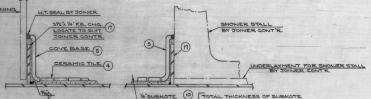
COMPARTMENT	FRAMES	SIDE	TYPE	COLOR (2)	REMARKS	DETAIL
UPP. DK. AFT (CONT'D.)						
T/S	45-49	S	CERAMIC			3-B
ASST. COOK S.R.	45-51	S	VINYL ASBESTOS	S18/VB12		3-A
DECK TOILET	48-50	S	CERAMIC			3-B
PASSAGEWAYS (EXCEPT VESTIBULES)	48-49	P&S	VINYL ASBESTOS	S18/VB12		3-A
STAIR LANDINGS	53-55	P&S	VINYL ASBESTOS	"		"
STAIR LANDING	39-41	S	VINYL ASBESTOS	"		"
STAIR TREADS (UP)	53-57	P&S	VINYL ASBESTOS	"		"
STAIR TREADS (UP)	40-44	C	VINYL ASBESTOS	S18/VB12		3-A
2ND DECK						
CONTROL ROOM	45-53	S	VINYL ASBESTOS	S18/VB12	INSULATED	5-A
DECK TOILET	51-53	W	CERAMIC			3-B
CLEANING GEAR LKR.	17-19	S	CERAMIC			3-B
STAIR TREADS (UP)	53-57	P&S	VINYL ASBESTOS	S18/VB12		

H-4639-234-1 ALT. 6
H-315 SHT. 14

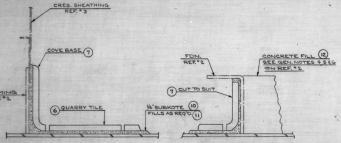
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



'3-A'
VINYL TILE & RUBBER TILE
CARPETED AREAS SIMILAR EXCEPT OMIT ITEMS 1 & 3



'3-B'
CERAMIC TILE
3/11-2



'3-C'
QUARRY TILE
3/11-2

GENERAL NOTES

1. FOR APPLICATION OF DETAILS & BILL OF MATERIAL SEE REF. 1.

NO.	DATE	ITEM	DESCRIPTION	MADE BY	APP'D
1	7/74	AT	DETAILS 3-A & 3-A CHANGED FROM VINYL ASBESTOS TO VINYL TILE TO CONFORM WITH REV. 1 ALT. 3	JK	

4548	12-1435
4639	12-1435
HULL	DESIGN

JOB NO. 234

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE AS NOTED — DATE 8/9/74
DRAWN TJL / 10/28/63 — APPROVED
TRACED — APPROVED
CHECKED JFK — APPROVED

PLAN NO. H-4639-234-2 — ALT NO. 1

DECK COVERING TYPICAL DETAILS

	APPROVAL LETTERS					
HULL	SUPT. OF ?					
APPROVED BY:	DATE	DATE	DATE	DATE	DATE	DATE
GENERAL	11-30-74					
A.B.S.						
U.S.C.G.						
LLOYD'S REG.						
U.S.P.H.S.						

NO.	PLAN NOS.	TITLE
3	H-4639-1101	INSULATION & SHEATHING
2	H-4639-234-4	DECK COVERING SCHEDULE
1	H-4639-234-1	DECK COVERING TYPICAL DETAILS

REFERENCE PLANS

ALTERATION	DATE OF ISSUE
PRELIMINARY	8/74
PROGRESSION	8/74
DEFINITION	8/74
IMAGES	8/74
4548 ARA	
4548 ARB	
4548 ARC	
4548 ARD	
4548 ARE	
4548 ARF	
4548 ARG	
4548 ARH	
4548 ARJ	
4548 ARK	
4548 ARL	
4548 ARM	
4548 ARN	
4548 ARP	
4548 ARQ	
4548 ARR	
4548 ARS	
4548 ART	
4548 ARU	
4548 ARV	
4548 ARW	
4548 ARX	
4548 ARY	
4548 ARZ	
4548 ASA	
4548 ASB	
4548 ASC	
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4548 ASE	
4548 ASF	
4548 ASG	
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4548 ASJ	
4548 ASK	
4548 ASL	
4548 ASM	
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4548 AST	
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4548 ATD	
4548 ATE	
4548 ATF	
4548 ATG	
4548 ATH	
4548 ATJ	
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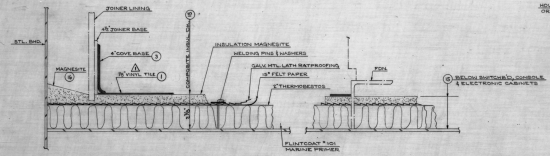
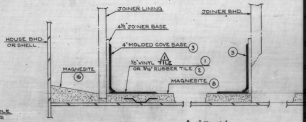
H-4639-234-2 ALT 1
H-316
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
H-4639-234-1

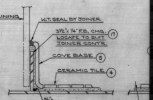
H-316 — 14 — 60 FT



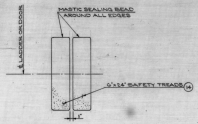
"5-A"
INSULATED DECK OF CONTROL ROOMS
SCALE 3"=1'-0"



"3-A"
VINYL TILE & RUBBER TILE
CARPETED AREAS SIMILAR EXCEPT UNIT ITEMS
SCALE 3"=1'-0"

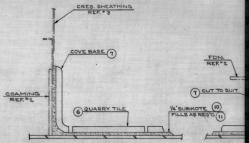


"3-B"
CERAMIC TILE
SCALE 3"=1'-0"



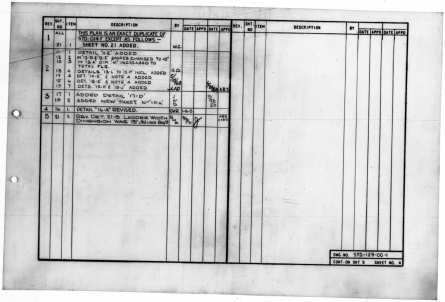
"4-A"
SCALE 1"=1'-0"

NOTE: SAFETY TREADS TO BE INSTALLED AT HEAD & FOOT OF INCLINED LADDERS, HEAD OF ACCOMODATION LADDER, BOTH SIDES OF ENTRANCE DOORS AND OUTSIDE OF REFRIGERATED SPACE DOORS.



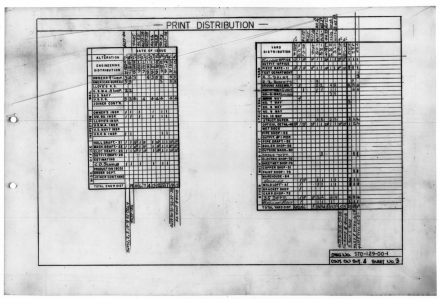
"3-C"
QUARRY TILE
SCALE 3"=1'-0"

BETHLEHEM STEEL CORP. JUNE 1974
H 4839-4 R6



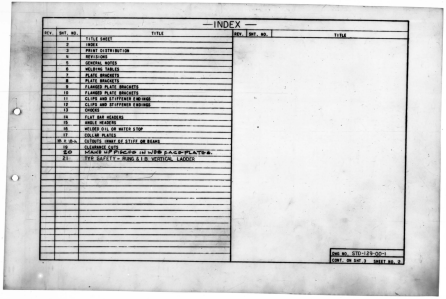
REV.	SHT. NO.	ITEM	DESCRIPTION	BY	DATE	APPD.	DATE	APPD.
1	ALL		THIS PLAN IS AN EXACT DUPLICATE OF STD-129-00-00 AS FOLLOWS —					
	21	I	SHEET NO. 21 ADDED	M.G.				
2	21	C	DETAIL "A" ADDED					
	13	R	W 10 x 33 # BEAM REVISED TO 18" W 10 x 33 # W 8 x 35 CHANGED TO TOTAL FLG.	A.D.				
	14	A	DET. "A" 1'-3 TO 2'-3" INCL. ADDED					
	15	A	DET. "B-E" & NOTE 4 ADDED					
	13	A	DETS. "B-F & I" ADDED					
3	17	I	ADDED DETAIL "17-D"					
	18	A	ADDED NEW SHEET NO. "18A"					
4	14	L	DETAIL "14-A" REVISED.					
5	10	I	Gen. Con't. to Bethlehem Welding Commission Weld "B" Notice Req'd.					

DWG NO. STD-129-00-1
CONT. ON SHT 5 SHEET NO. 4



— PRINT DISTRIBUTION —

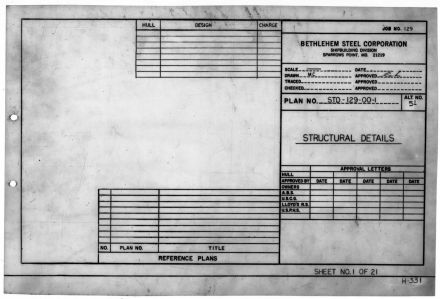
DWG NO. STD-129-00-1
CONT. ON SHT. 4 SHEET NO. 3



— INDEX —

REV.	SHT. NO.	TITLE
	1	TITLE SHEET
	2	INDEX
	3	PRINT DISTRIBUTION
	4	REVISIONS
	5	GENERAL NOTES
	6	WELDING TABLES
	7	PLATE BRACKETS
	8	PLATE BRACKETS
	9	FLANGED PLATE BRACKETS
	10	FLANGED PLATE BRACKETS
	11	CLIPS AND STIFFENER ENDINGS
	12	CLIPS AND STIFFENER ENDINGS
	13	CHORDS
	14	FLAT BAR HEADERS
	15	ANGLE HEADERS
	16	WELDED SILL OR WATER STOP
	17	COLLAR PLATES
	18 & 18A	CLEATS FRONT OF STUFF OR BEAMS
	19	CLEATS
	20	SQUARE OPENINGS IN WEB FACE PLATES
	21	EYE SAFETY — RUNG & I.B. VERTICAL LADDER

DWG NO. STD-129-00-1
CONT. ON SHT 2 SHEET NO. 2



MILL	DESIGN	CHARGE

JOB NO. 129

BETHLEHEM STEEL CORPORATION
BETHLEHEM, INDIANA
SHIPBUILDING DIVISION
SHIPYARD POINT, NO. ELEVEN

SCALE ——— DATE ———
DRAWN W.G. DATE 5-6-74
TRACED ——— APPROVED ———
CHECKED ——— APPROVED ———

PLAN NO. STD-129-00-1 ALT NO. 5

STRUCTURAL DETAILS

APPROVAL LETTERS					
MILL					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS					
A.B.S.					
U.S.C.G.					
LLOYD'S REG.					
NEPHEW.					

NO.	PLAN NO.	TITLE

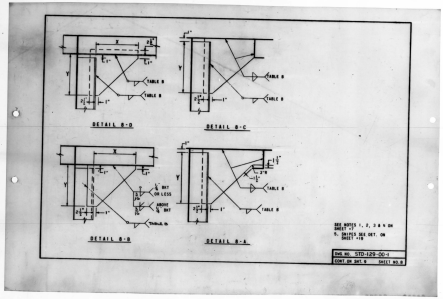
REFERENCE PLANS

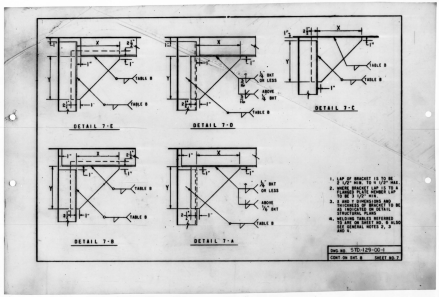
SHEET NO. 1 OF 21

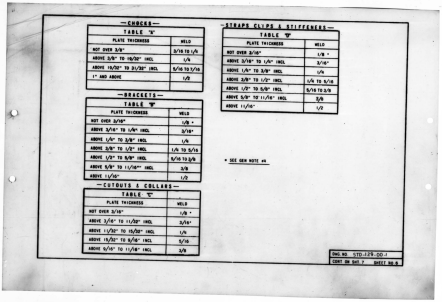
H-331

STD129.00-1
ALT 5
SHT. 1, 2, 3, 4 H-331
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

STD129.00-1
A175
SHT 5,6,7,8
H-331
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X







—CHORDS—

TABLE 'A'

PLATE THICKNESS	WELD
NOT OVER 3/4"	3/16 TO 1/4
ABOVE 3/4" TO 15/16" INCL	1/4
ABOVE 15/16" TO 2 1/2" INCL	5/16 TO 5/16
1" AND ABOVE	1/5

—BRACKETS—

TABLE 'B'

PLATE THICKNESS	WELD
NOT OVER 3/4"	1/8 *
ABOVE 3/4" TO 1 1/4" INCL	3/16*
ABOVE 1/4" TO 2 1/2" INCL	1/4
ABOVE 2 1/2" TO 3" INCL	1/4 TO 5/16
ABOVE 1/2" TO 3/4" INCL	5/16 TO 3/8
ABOVE 3/4" TO 1 11/16" INCL	3/8
ABOVE 1 11/16"	1/2

—CUTOUTS & COLLARS—

TABLE 'C'

PLATE THICKNESS	WELD
NOT OVER 3/16"	1/8 *
ABOVE 3/16" TO 11/32" INCL	3/16*
ABOVE 11/32" TO 15/32" INCL	1/4
ABOVE 15/32" TO 5/16" INCL	5/16
ABOVE 5/16" TO 11/16" INCL	3/8

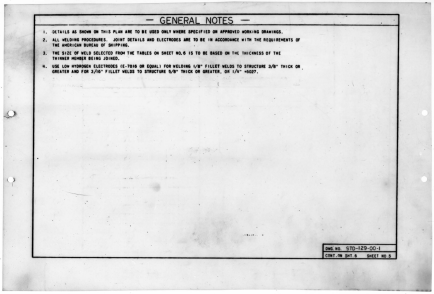
—STRAPS CLIPS & STIFFENERS—

TABLE 'D'

PLATE THICKNESS	WELD
NOT OVER 3/16"	1/8 *
ABOVE 3/16" TO 1/4" INCL	3/16*
ABOVE 1/4" TO 3/8" INCL	1/4
ABOVE 3/8" TO 1/2" INCL	1/4 TO 5/16
ABOVE 1/2" TO 5/8" INCL	5/16 TO 3/8
ABOVE 5/8" TO 11/16" INCL	3/8
ABOVE 11/16"	1/2

* SEE GEN NOTE #6

DWG NO. STD-129-00-1
CONT ON SHT 7
SHEET NO 6



— GENERAL NOTES —

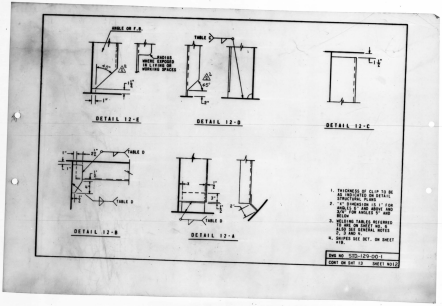
1. DETAILS AS SHOWN ON THIS PLAN ARE TO BE USED ONLY WHERE SPECIFIED ON APPROVED WORKING DRAWINGS.
2. ALL WELDING PROCEDURES, JOINT DETAILS AND ELECTRODES ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN BUREAU OF SHIPPING.
3. THE SIZE OF WELD SELECTED FROM THE TABLES ON SHEET NO. 6 IS TO BE BASED ON THE THICKNESS OF THE THINNER MEMBER BEING JOINED.
4. USE LOW HYDROGEN ELECTRODES (E-7018 OR EQUAL) FOR WELDING 1/8" FILLET WELDS TO STRUCTURE 3/8" THICK OR GREATER AND FOR 3/16" FILLET WELDS TO STRUCTURE 5/8" THICK OR GREATER, OR 1/4" =GOST.

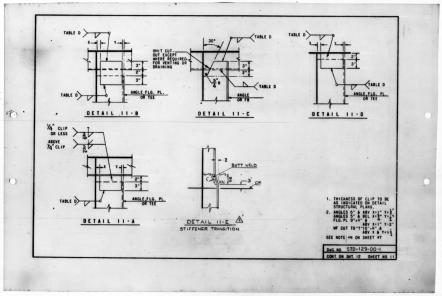
DWG NO. STD-129-00-1
CONT ON SHT 8
SHEET NO 8

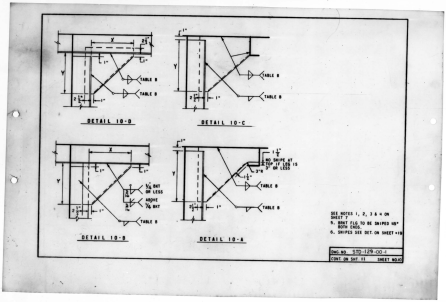
STD129.00-1
ALT.5

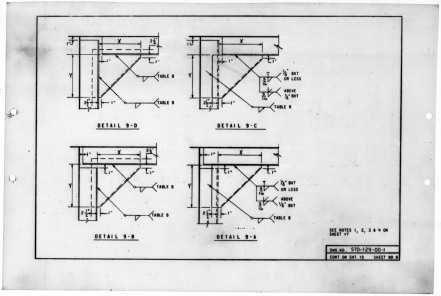
SHT 9, 10, 11, 12 H-331

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

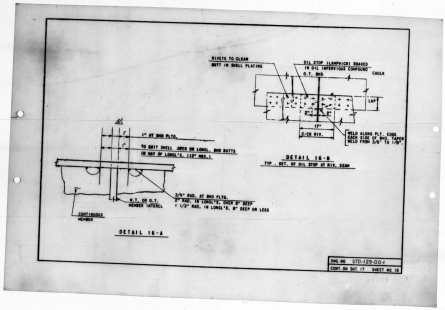


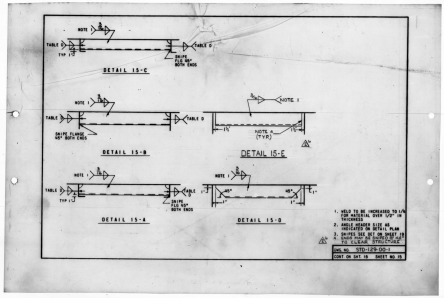


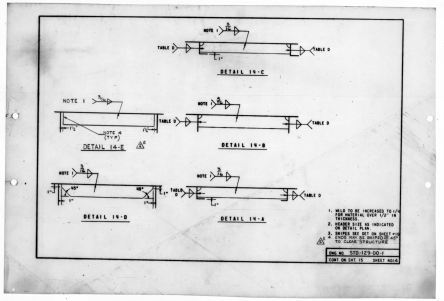


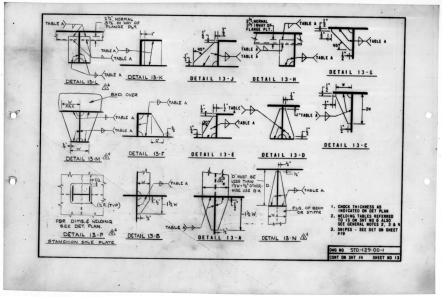


STD 129.00-1
ALT 5
SHT 13, 14, 15, 16
H-331
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X









STD 129.03-1
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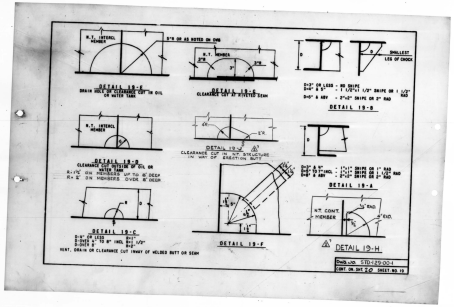
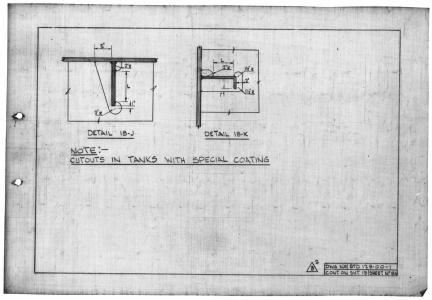
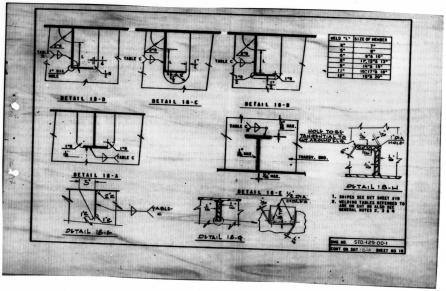
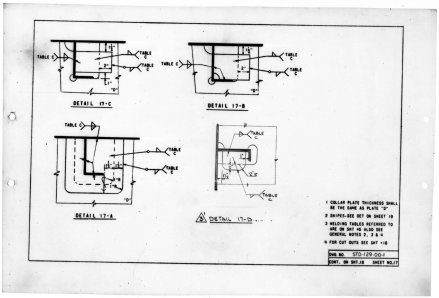
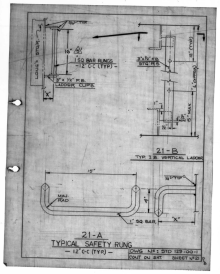
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

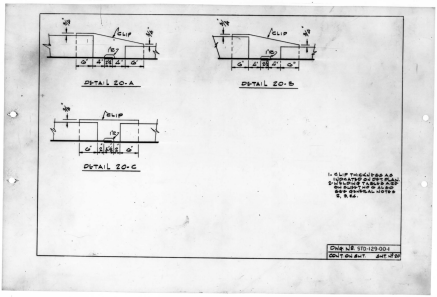












STD 126.03-1
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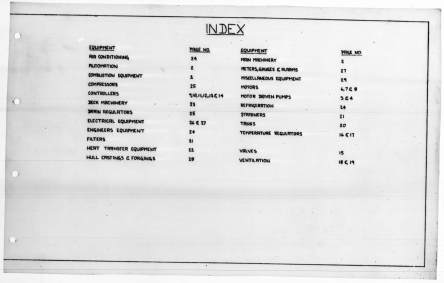
SHT 20, 21
H-331
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



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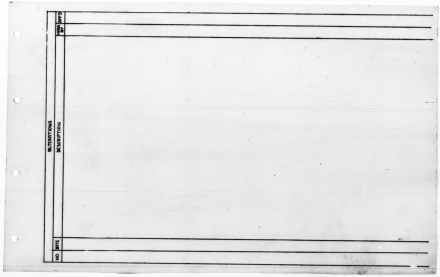

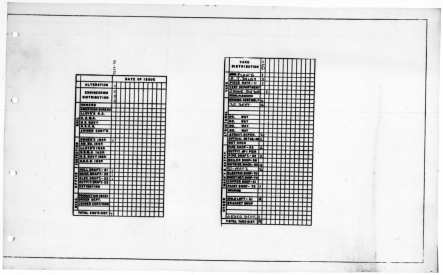

MACHINERY LIST

HULLS 4639-40

CONTAINER SHIPS

FOR

PACIFIC FAR EAST LINES INC.

DWG. NO. M-4639-371-6

M-4639-371-6 ALT - M-422 Engr. Interior Mfg. Index

BETHLEHEM STEEL CORP. JULY 1974 H 4639-4640 8X

HULL 4639-40

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	DATE APP.	REQUISITIONS DATE ISSUED	NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	EST. WEIGHTS	REMARKS
	MOTOR DRIVEN PUMPS												
	FIRE PUMP	2		4639-10		7-7-70	22-39012-D	707-H1552-P	WORTHINGTON CORP.	3-1-71		1140#	VERTICAL, MODEL 4LRV-11, CAPACITY 700 GPM. TOTAL HEAD 280 FT. SPEED 3550 RPM, POWER 65 BHP. FLOODED SUCTION.
	BALLAST PUMP	1		4639-10		7-7-70	22-39012-D	707-H1552-P	WORTHINGTON CORP.	3-1-71		960#	VERTICAL, MODEL 8LRV-13, CAPACITY 2000 GPM. TOTAL HEAD 160 FT. SPEED 1750 RPM, POWER 101 BHP. SUCTION. — 20 FT. LIFT
	MAIN BILGE PUMP	1		4639-10		7-7-70	22-39012-D	707-H1552-P	WORTHINGTON CORP.	3-1-71		600#	VERTICAL, MODEL 6LRV-10, CAPACITY 1050/525 GPM TOTAL HEAD 100/25' SPEED 1750/875 RPM POWER 35.5/5 BHP, 20 FT. LIFT.
	GENERAL SERVICE PUMP, AFT	1		4639-10		7-7-70	22-39012-D	707-H1552-P	WORTHINGTON CORP.	3-1-71		780#	VERTICAL, MODEL 5LRV-15, CAPACITY 500/1050 GPM. TOTAL HEAD 280/78 FT. SPEED 1750/1150 RPM. POWER 58/31.3 BHP. FLOODED/20 FT. LIFT SUCTION.
	S.W. SERVICE PUMP, AFT.	1		4639-10		7-7-70	22-39012-D	707-H1552-P	WORTHINGTON CORP.	3-1-71		600#	VERTICAL, MODEL 4LRV-12, CAPACITY 850 GPM. TOTAL HEAD 110 FT. SPEED 1750 RPM, POWER 34 BHP. FLOODED SUCTION.
	S.W. SERVICE PUMP, FWD.	2		4639-60		7-7-70	22-39012-P	707-H1560-P	WORTHINGTON CORP.	7-1-71		900#	HORIZONTAL, MODEL 3LR-9, CAPACITY 150 GPM. TOTAL HEAD 80 FT. SPEED 1750 RPM, POWER 5.5 BHP, FLOODED SUCTION.
	DISTILLER FEED PUMPS	2		4639-11		5-28-70	22-39012-R	528-H1536-P	WARREN PUMPS	3-15-71		675#	VERTICAL, MODEL 2-D-BYB, CAPACITY 220 GPM. TOTAL HEAD 75 FT. SPEED 1750 RPM, POWER 6.6 BHP, FLOODED SUCTION.
	FRESH WATER PUMP	2		4639-6		6-16-70	22-39012-F	616-H1503-P	AURORA PUMP	3-1-71		250#	HORIZONTAL, MODEL H6, CAPACITY 70 GPM. TOTAL HEAD 165 FT. SPEED 1750 RPM. POWER 7.7 BHP. 16' LIFT SUCTION
	POTABLE WATER PUMP	2		4639-6		6-16-70	22-39012-F	616-H1503-P	AURORA PUMP	3-1-71		110#	HORIZONTAL, MODEL J5, CAPACITY 30 GPM. TOTAL HEAD 165 FT. SPEED 1750 RPM. POWER 3.2 BHP. FLOODED SUCTION.
	POTABLE & SANITARY WATER PUMP	2		4639-6		6-16-70	22-39012-F	616-H1503-P	AURORA PUMP	3-1-71		279#	HORIZONTAL, MODEL K6, CAPACITY 100 GPM. TOTAL HEAD 165 FT. SPEED 1750 RPM. POWER 105 BHP. FLOODED SUCTION.
	POTABLE WATER TRANSFER PUMP	2		4639-6		6-16-70	22-39012-F	616-H1503-P	AURORA PUMP	3-1-71		110#	HORIZONTAL, MODEL J5, CAPACITY 30 GPM. TOTAL HEAD 165 FT. SPEED 1750 RPM. POWER 3.2 BHP. FLOODED SUCTION
	CONTAMINATED EVAPORATOR FEED PUMPS	2		4639-6		6-16-70	22-39012-F	616-H1503-P	AURORA PUMP	3-1-71		291#	HORIZONTAL, MODEL F6T, CAPACITY 40 GPM. TOTAL HEAD 380 FT. SPEED 1750 RPM. POWER 11.5 BHP. 36" SUBMERGED SUCTION.
	STEAM DRIVEN PUMPS												
	MAIN FEED PUMP	2		4639-7		6-5-70	22-39012-A	605-H1500-P	PACIFIC PUMPS INC.	3-1-71		3900#	HORIZONTAL, SINGLE STAGE, TYPE TBA-16 CAPACITY 580 GPM. TOTAL HEAD 2880 FT. SPEED 9884 RPM. PRESS. 847 PSIG. TEMP. 560°F.

HULL 4639-40

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	DATE APP.	REQUISITIONS DATE ISSUED	NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	EST. WEIGHTS	REMARKS
	MOTOR DRIVEN PUMPS												
	MAIN CIRCULATING PUMP	1		4639-3		5-28-70	22-39012	528-H1534-P	WARREN PUMPS	3-1-71		5,600#	VERTICAL, MODEL 30VP, CAPACITY 28,000 GPM. TOTAL HEAD 15 FT. SPEED 590/290 RPM. POWER 160/50 BHP. LIQUID SALT WATER.
	AUX. CIRCULATING PUMP	1		4639-3		5-28-70	22-39012	528-H1534-P	WARREN PUMPS	3-1-71		2420#	VERTICAL, MODEL 14 DBV-16, CAPACITY 4,500 GPM. TOTAL HEAD 25 FT. SPEED 690 RPM. POWER 48.9 BHP. LIQUID SALT WATER.
	MAIN CONDENSATE PUMP	2		4639-3		5-28-70	22-39012	528-H1534-P	WARREN PUMPS	3-1-71		1700#	VERTICAL, MODEL 5-2CV-18, CAPACITY 480 GPM. TOTAL HEAD 275 FT. SPEED 1180 RPM. POWER 57.0 BHP. LIQUID FRESH WATER.
	AUX. CONDENSATE PUMP	2		4639-3		5-28-70	22-39012	528-H1534-P	WARREN PUMPS	3-1-71		720#	VERTICAL, MODEL 2-2CV-13, CAPACITY 65 GPM. TOTAL HEAD 280 FT. SPEED 1765 RPM. POWER 12.8 BHP. LIQUID FRESH WATER.
	LUBE OIL SERVICE PUMP	2		4639-5		6-22-70	22-39012-C	622-H1502-P	DELAVAL TURBINE CO.	3-1-71		2,100#	MODEL 422-362, CAPACITY 627 GPM. DISCHARGE PRESS. 75 PSIG. VIS. 500 SSU. SPEED 1750 RPM. BHP. 42.4
	LUBE OIL TRANSFER PUMP	1		4639-5		6-22-70	22-39012-C	622-H1502-P	DELAVAL TURBINE CO.	3-1-71		155#	MODEL A313A-143, CAPACITY 38 GPM. DISCHARGE PRESS. 60 PSIG. VIS. 925 SSU. SPEED 3500 RPM. BHP 4.4
	FUEL OIL SERVICE PUMP	2		4639-5		6-22-70	22-39012C	622-H1502-P	DELAVAL TURBINE CO.	3-1-71		900#	MODEL A33B-218, CAPACITY 67 GPM. DISCHARGE PRESS. 320 PSIG. VIS. 3700 SSU. SPEED 1750 RPM. BHP 19.6
	DIESEL OIL START PUMP	1		4639-5		6-22-70	22-39012C	622-H1502-P	DELAVAL TURBINE CO.	3-1-71		120#	MODEL A33B-106, CAPACITY 5 GPM. DISCHARGE PRESS. 150 PSIG. VIS. 200 SSU. SPEED 1750 RPM. BHP. .82
	FUEL OIL TRANSFER PUMP	2		4639-5		6-22-70	22-39012-C	622-H1502-P	DELAVAL TURBINE CO.	3-1-71		4,930#	MODEL 323F-550V CAPACITY 527 GPM. DISCHARGE PRESS. 125 PSIG. VIS. 4700 SSU. SPEED 570 RPM. BHP 53.8
	EMERGENCY FEED & TRANSFER PUMP	1		4639-4		7-10-70	22-39011	710-H1568-P	UNION PUMP CO.	4-15-71		220#	HORIZONTAL, MODEL TD-30, CAPACITY 203 GPM, DISCHARGE PRESS. 1200 PSIG. SPEED 412 RPM, BHP 16
	ATMOSPHERIC DRAIN TANK PUMPS	2		4639-63		5-28-70	22-39012-K	528-H1535-P	WARREN PUMPS	3-15-71		580#	VERTICAL, TYPE 2-SSC-B, CAPACITY 50 GPM, TOTAL HEAD 210 FT., SPEED 3500 RPM, BHP 8.5
	VACUUM PRIMING PUMPS	4		4639-47		6-11-70	22-39012-M	611-H1505-P	NASH ENG. CO.	3-1-71		2820#	MODELS MD-673 & MD-571, CAPACITY 38 CFM (10 CFM) SUCTION 10" & 15" HG WITH 2.5 & 1.8 BHP. REFERING TO EACH MODEL. SPEED FOR BOTH MODELS IS 1750 RPM.
	FWD. BILGE & OILY BILGE PUMPS	2		4639-9		5-28-70	22-39012-E	528-H1532-P	MEGATOR CO.	3-15-71		700# 700#	MODELS K3 & DK4, CAPACITY 100 GPM & 200 GPM TOTAL HEAD 86' & 95' WITH 4.5 & 9.5 BHP REFERING TO EACH MODEL. SPEED FOR EACH MODEL IS 875 RPM.
	POTABLE HOT WATER CIRCULATING PUMPS	4		4639-12		7-7-70	22-39012-H	707-H1557-P	TACO HEATER INC.	4-15-71		400#	VERTICAL, TACO MODEL 115-1 CIRCULATE 180°F FRESH WATER AT 5 GPM, TOTAL HEAD 11 FT.

HULL 4639-40

ITEM NO.	DESCRIPTION	NO. REQ'D. PER SHIP	DUPLICATE OF REQUISITION NO.	SPECIFICATIONS NO.	DATE APP.	REQUISITIONS DATE ISSUED	NUMBER	PURCHASE ORDER	VENDOR	DATE REQUIRED FOR FIRST HULL	VENDOR PRINTS REC'D	EST. WEIGHTS	REMARKS
	AUTOMATION & CENTRALIZED CONTROL												
	MAIN PROPULSION SPEED & DIRECTION CONTROL SYSTEM	1		4639-2		7-7-70	23-39087	707-H1507-P	GENERAL ELECTRIC CO.	5-1-71			CONTROL SYSTEM SHALL BE SUITABLE FOR AND COMPLETE WITH THE COMPONENTS FOR CONTROLLING THE AHEAD & ASTERN THROTTLE VALVES OF A — DELAVAL CROSS-COMPOUND, GEARED TURBINE PROPULSION UNIT WITH A MAX. AHEAD RATING OF 32,000 SHP AT 110 RPM.
	BOILER CONTROL SYSTEM	1		4639-2		7-7-70	23-39087	707-H1507-P	GENERAL ELECTRIC CO.	5-1-71			A COMPLETE AUTOMATIC TWO-ELEMENT COMBUSTION, TWO-ELEMENT FEEDWATER, & CLOSED LOOP BURNER CONTROL SYSTEM SHALL BE PROVIDED. BOILER CONTROLS SHALL BE INTEGRATED DIRECTLY WITH THE BRIDGE THROTTLE CONTROL SYSTEM & SHALL ENABLE THE BOILERS TO BE OPERATED UNATTENDED OVER THE ENTIRE RANGE OF STEAM DEMAND AT SEA & IN PORT.
	MAIN MACHINERY												
	MAIN PROPULSION	1		4639-8		2-26-70	22-39002	226-H1502-P	DELAVAL TURBINE INC.	3-15-71		168.5 TONS	THE MAIN PROPULSION TURBINE & REDUCTION GEAR UNIT SHALL BE MFD. BY THE DELAVAL TURBINE INC. & SHALL BE OF THE CROSS COMPOUND MARINE TYPE WITH ONE H.P. TURB. & ONE L.P. TURB. INCLG. ASTERN ELEM. CONN'D THRU FLEX. CPLG. TO A DOUBLE RED. LOCKED TRAIN GEAR CONT. OPERG. COND. SHP 28,000, RPM 106, 850# STM @ 950°F/28.5 Hg
	MAIN CONDENSER	1		4639-31		5-14-70	22-39004A	514-H1501-P	FOSTER-WHEELER	4-1-71		96 TONS	THE CONDENSER SHALL BE A FOSTER WHEELER REHEATING STR. TUBE SURF. TYPE ARRGD. FOR SINGLE PASS CIRC. IT WILL RECEIVE EXH. FR. BOTH MN. TURB. & TURB. GEN. SURF. 24825 SQ. FT.
	MAIN AIR EJECTOR	1		4639-34		8-17-70	22-39007	817-H1500-P	WORTHINGTON CORP.	6-15-71		3200#	THE MAIN AIR EJECTOR SHALL BE A WORTHINGTON TYPE 4CTH-M TWIN ELEMENT. TWO-STAGE UNIT WITH SURFACE TYPE INTER & AFTER CONDENSER
	400 KW. DIESEL GENERATOR SET	1		4639-56		6-29-70	22-39053A	629-H1502-P	ALBAN TRACTOR CO.	4-15-71		19,000#	MODEL D398TA, SERIES D, 12 CYLINDER, 4 CYCLE DIESEL ENGINE DIRECT CONNECTED TO A 400 KW. KATO ALT. CURRENT GENERATOR, ALL MOUNTED ON A FAB. STEEL BASEPLATE.
	AUX. AIR EJECTOR	1		4639-34		8-17-70	22 39007	817-H1500 P	WORTHINGTON CORP.	6-15-71		1600#	THE AUX. AIR EJECTOR SHALL BE A WORTHING TYPE 3CTH-M TWO STAGE TWIN ELEM. UNIT WITH SEP. INTER CONDS & A COMMON AFTER COND. ARRGD FOR AUTOM. CONTR.
	2500 K.W. TURBO-GENERATORS	2		4639-22		5-19-70	22-39053	519-H1522-P	WORTHINGTON CORP.	5 1 71		51,000#	TURB. GEN. SET SHALL CONSIST OF A WORTHINGTON TYPE "SU" MARINE MULTISTAGE TURBINE DRIVING AN ELECTRIC MACH'Y. MFG. CO. 2500 KW. A.C. GEN. THRU A SINGLE RED. GEAR, ALL MTND. ON A FAB. STL. BEDPLATE. WITH INLET STM. 850 PSIG.-950°F-440V. 3 PHASE 60 CYC.
	AUX. CONDENSER	1		4639 33		5-14-70	22-39004B	514-H1502-P	GRAHAM MFG CO	3 1 71		32,000#	THE CONDENSER SHALL BE A GRAHAM MFG. CO. STRAIGHT TUBE SURFACE TYPE, ARRGD. FOR TWO PASSES OF WATER & WILL REMOVE EXH. STM. FROM EITHER T/G SET. SURF. 4110 SQ. FT.

HULL 4639-40

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	COMBUSTION EQUIPMENT												
	MAIN BOILERS	2		4639-1		5-20-70	22-39001	520-H1545P	BABCOCK & WILCOX CO.	1-7-71		330,300#	2 DRUM, BENT TUBE, ROOF FIRED, SINGLE FURNACE, SINGLE UPTAKE, AIR ENCASED TYPE, TOTAL EVAP. 100,885 LBS/HR. SUPERHTG. STM. 94,685 LBS/HR. DESUPERHTG. STM. 6,200 LBS/HR. FURNACE VOL. 1695 CU. FT.
	FUEL OIL BURNERS	4		4639-1		5-20-70	22-39001	520-H1545P	BABCOCK & WILCOX CO.	1-7-71		INCL. IN BOILER	BABCOCK & WILCOX CO. "RACER" TYPE WIDE RANGE STM. ATOMIZING BURNERS.
	BOILER AIR HEATER	2		4639-24		7-21-70	22-39004-D	721-H1509P	BUFFALO FORGE CO.	5-1-71		3,760#	SINGLE VERT. DOWNWARD PASS OF AIR THROUGH THE COIL SECTIONS. AIR QTY. 27,200, AIR INLET TEMP. 100°F., OUTLET 263°F.
	FORCED DRAFT BLOWERS	2		4639-23		7-9-70	22-39035	709-H1509P	BUFFALO FORGE CO.	6-15-71		7,600#	SIZE #890, TYPE L-33 HEAVY DUTY CAPACITY 52,000 CFM. STATIC PRESS 21.0 H_2O, SPEED 1780 RPM. POWER 245 BHP. ONE CLOCKWISE-ONE COUNTERCLOCKWISE
	AUTOMATIC BOILER WATER CONTROL SYSTEM	2		4639-49		10-7-70	22-39044-A	1007-H1512P	BULL & ROBERTS	8-15-71			DRUM PRESS. 1025 PSIG. MAX. TEMP. 545°F. CAPABLE OF HANDLING 23,400 LB. STEAM. CAPABLE OF WITHSTANDING 1100 PSIG. PRESS.
	CONDENSATE pH CONTROL SYSTEM	1		4639-49		10-7-70	22-39044-A	1007-H1512P	BULL & ROBERTS	8-15-71			CONSISTING OF A DRIP FEED INJECTION SYSTEM WITH SOLENOID VALVE & A pH SAMPLING PANEL.
	BOILER WATER & COND. TEST CABINET	1		4639-49		10-7-70	22-39044-A	1007-H1512P	BULL & ROBERTS	8-15-71			PROVIDED FOR THE PURPOSE OF MANUAL CHECKING, SHALL BE EQUIPPED TO CONDUCT ALL THE NECESSARY MANUAL BOILER WATER TESTS.
	STEAM DESUPERHEATER	2		4639-61		6-25-70	22-39010-B	625-H1502P	SCHUTTE-KOERTING	4-15-71		430#	SIZE 1-5" — FIG. 6910, SURFACE ABSORPTION TYPE, STM. PRESS AT RED. VALVE INLET 250 PSIG. STM. TEMP. AT RED. VALVE INLET 460°F.

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M-4639-371-6 ALT. -

M-422

Sht. 1, 2, 3, 4

BETHLEHEM STEEL CORP. JULY 1974

H 4639-4640

8X

F

M-4639-371-6
ALT.-
M-422
Sht. 5,6,7,8

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

GD 85-200-6.57

HULL 4639-40

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	CONTROLLERS												
	LIFEBOAT WINCHES	2		4639-517		1-7-71	23-39051	107-H1531-R	GENERAL ELECTRIC	9-30-71		92#	10 HP. 1800 RPM., A-T-L MAGNETIC, SEMI-AUTO, WATERTIGHT, AMB. TEMP. 40°C.
	AFT FRESH WATER & SANITARY PUMPS	2		4639-565		8-10-70	23-39051-B	810-H1539-P	GENERAL ELECTRIC	6-30-71		45#	10 HP., 1800 RPM., A-T-L MAGNETIC, AUTO. & SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	AFT POTABLE WATER PUMPS	2		4639-565		8-10-70	23-39051-B	810-H1539-P	GENERAL ELECTRIC	6-30-71		45#	5 HP., 1800 RPM., A-T-L MAGNETIC, AUTO. & SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	AFT POTABLE WATER TRANSFER PUMPS	2		4639-565		8-10-70	23-39051-B	810-H1539-P	GENERAL ELECTRIC	6-30-71		45#	5 HP. 1800 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	FWD. POTABLE & SANITARY PUMPS	2		4639-565		8-10-70	23-39051-B	810-H1539-P	GENERAL ELECTRIC	6-30-71		42#	15 HP., 1800 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	CONTAMINATED EVAP. FEED PUMPS	2		4639-565		8-10-70	23-39051-B	810-H1539-P	GENERAL ELECTRIC	6-30-71		42#	15 HP. 1800 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	LUBE OIL SERVICE PUMPS	2		4639-507		8-18-70	23-39051-C	818-H1534-P	GENERAL ELECTRIC	6-30-71		90#	50 HP., 1800 RPM., A-T-L MAGNETIC, AUTO & SEMI-AUTO, O-LOAD & L-VOLT RELEASE, DRIPPROOF, AMB. TEMP. 50°C.
	LUBE OIL TRANSFER PUMP	1		4639-507		8-18-70	23-39051-C	818-H1534-P	GENERAL ELECTRIC	6-30-71		35#	5 HP. 3600 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	FUEL OIL SERVICE PUMPS	2		4639-507		8-18-70	23-39051-C	818-H1534-P	GENERAL ELECTRIC	6-30-71		90#	25/12.5HP., 1800/900 RPM., A-T-L MAGNETIC, AUTO & SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	DIESEL OIL PUMP (AUX. STARTING)	1		4639-507		8-18-70	23-39051-C	818-H1534-P	GENERAL ELECTRIC	6-30-71		40#	1 HP., 1800 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	FUEL OIL TRANSFER PUMPS	2		4639-507		8-18-70	23-39051-C	818-H1534-P	GENERAL ELECTRIC	6-30-71		200#	60/30 HP., 600/300 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 50°C.
	STORES HANDLING CRANES	2		4639-515		12-23-70	23-39051-D	1223-H1525-P	GENERAL ELECTRIC	10-15-71		100#	100 HP., 1800 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 40°C.
	STEWARD'S STORES CRANES	2	NOT ORDERED YET	4639-515			23-39051-D		GENERAL ELECTRIC				25 HP., 1800 RPM., A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF, AMB. TEMP. 40°C.
	HOSE HANDLING CRANES	2		4639-515		12-23-70	23-39051-D	1223-H1525-P	GENERAL ELECTRIC	10-15-71		45#	25HP. 1800 RPM. A-T-L MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF AMB. TEMP. 40°C.

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	MOTORS												
	SHIP'S STORES REFRIGERATION COMPRESSOR	2		4639-522		8-18-70	23-39050-N	818-H1515-D	GENERAL ELECTRIC	5-1-71		160#	10 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG. FLEXIBLE COUPLING.
	AIR COND. AFT QUARTERS	1		4639-524		9-16-70	23-39050-P	916-H1514-D	GENERAL ELECTRIC	2-15-71		650#	75 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., V-BELT COUPLING.
	AIR COND. FWD. QUARTERS	1		4639-524		9-16-70	23-39050-P	916-H1514-D	GENERAL ELECTRIC	2-15-71		300#	30 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., V-BELT COUPLING.
	STORES HANDLING CRANES	2		4639-514		1-7-71	23-39050-R	107-H1525-R	GENERAL ELECTRIC	6-30-71		1125#	100 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS AT 10 BHP. FOLLOWED BY ½ HR. AT 100 BHP., WATERTIGHT - TOTALLY ENCLOSED, HORIZ. MTG. FLEXIBLE COUPLING.
	STEWARD'S STORES CRANES	2		4639-514		1-7-71	23-39050-R	107-H1525-R	GENERAL ELECTRIC	6-30-71		450#	25 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS AT 2 BHP. FOLLOWED BY ½ HR. AT 27.0 BHP., WATERTIGHT - TOTALLY ENCLOSED, HORIZ. MTG., FLEXIBLE COUPLING.
	HOSE HANDLING CRANES	2		4639-514		1-7-71	23-39050-R	107-H1525-R	GENERAL ELECTRIC	6-30-71		450#	25HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINOUS AT 2 BHP FOLLOWED BY ½ HR AT 27.0 BHP. WATERTIGHT-TOTALLY ENCLOSED HORIZ MTG., FLEXIBLE COUPLING.
	STERN MOORING CAPSTAN	1		4639-518		8-10-70	23-39050-S	810-H1514-D	GENERAL ELECTRIC	5-1-70		920#	60 HP., 1200 RPM., 440 V., 3 PHASE, 60 HERTZ, 30 MIN. FULL LOAD DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., FLEXIBLE COUPLING.
	DISTILLER FEED PUMPS	2		4639-574		8-18-70	23-39050-T	818-H1544-P	GENERAL ELECTRIC	5-1-71		165#	7½ HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	FWD. SALT WATER SERVICE PUMPS	2		4639-574		8-18-70	23-39050-T	818-H1544-P	GENERAL ELECTRIC	5-1-71		160#	7½ HP. 1800 RPM. 440 V., 3 PHASE, 60 HERTZ, CONTINOUS DUTY DRIPPROOF PROTECTED HORIZ. MTG. FLEXIBLE COUPLING.
	ANCHOR WINDLASS	2		4639-510		8-18-70	23-39050-U	818-H1531-P	GENERAL ELECTRIC	6-30-71		1900#	125 HP., 1200 RPM., FULL LOAD SPEED AT 576 FT. LBS. 1160, 440 V., 3 PHASE, 60 HERTZ, 30 MIN. FULL LOAD DUTY, DRIPPROOF PROTECTED, VERT. MTG., GEARED PINION COUPLING.
	ACCOMMODATION LADDER WINCHES	2		4639-578			23-39050-V		GENERAL ELECTRIC				10 HP., 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS AT 2 HP. FOLLOWED BY 15 MIN. AT 10 HP., WATERPROOF HORIZ. MTG., FLEXIBLE COUPLING.

GD 85-200-6.57

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	MOTORS												
	AFT SALT WATER SERVICE PUMP	1		4639-556		8-13-70	23-39050-C	813-H1541-P	GENERAL ELECTRIC	4-1-71		400#	40 HP. 1800 RPM. 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	AIR COMPRESSORS	2		4639-528		8-26-70	23-39050-D	826-H1556-P	GENERAL ELECTRIC	3-15-71		300#	30 HP. 1800 RPM. 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., V-BELT COUPLING.
	FORCED DRAFT BLOWERS	2		4639-520		8-18-70	23-39050-E	818-H1545-P	GENERAL ELECTRIC	5-1-71		3500#	250/75/19 HP. 1800/1200/600 RPM., 440 V. 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG. FLEXIBLE COUPLING.
	ATMOSPHERIC DRAIN TANK PUMP	2		4639-560		8-18-70	23-39050-F	818-H1530-P	GENERAL ELECTRIC	4-20-71		165#	10 HP. 3600 RPM. 440 V. 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	FORWARD BILGE PUMP	1		4639-562		8-18-70	23-39050-G	818-H1513-P	GENERAL ELECTRIC	4-20-71		170#	5 HP. 1800 RPM., 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., V-BELT COUPLING.
	OILY BILGE PUMP	1		4639-562		8-18-70	23-39050-G	818-H1513-P	GENERAL ELECTRIC	4-20-71		160#	10 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., V-BELT COUPLING.
	AFT FRESH WATER & SANITARY PUMPS	2		4639-564		8-18-70	23-39050-H	818-H1532-P	GENERAL ELECTRIC	1-18-71		160#	10 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., FLEXIBLE COUPLING.
	AFT POTABLE WATER PUMPS	2		4639-564		8-18-70	23-39050-H	818-H1532-P	GENERAL ELECTRIC	1-18-71		170#	5 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., FLEXIBLE COUPLING.
	AFT POTABLE WATER TRANSFER PUMPS	2		4639-564		8-18-70	23-39050-H	818-H1532-P	GENERAL ELECTRIC	1-18-71		170#	SAME AS ABOVE.
	FWD. POTABLE & SANITARY PUMPS	2		4639-564		8-18-70	23-39050-H	818-H1532-P	GENERAL ELECTRIC	1-18-71		190#	15 HP. 1800 RPM., 440V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., FLEXIBLE COUPLING.
	CONTAMINATED EVAP. FEED PUMPS	2		4639-564		8-18-70	23-39050-H	818-H1532-P	GENERAL ELECTRIC	1-18-71		190#	SAME AS ABOVE.
	EMERGENCY FEED & TRANSFER PUMP	1		4639-504		8-26-70	23-39050-K	826-H1526-P	GENERAL ELECTRIC	5-6-71		215#	20 HP. 1800 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., V-BELT COUPLING.
	LIFEBOAT WINCHES	2		4639-516		1-8-71	23-39050-M	108-H1533-R	GENERAL ELECTRIC	8-15-71		225#	10 HP. 1800 RPM. 440V., 3 PHASE, 60 HERTZ, 15 MINUTE INTERMITTENT DUTY, WATERPROOF - TOTALLY ENCLOSED, VERT.-FLANGE MTG., FLEXIBLE-CLUTCHED COUPLING.

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	MOTORS												
	MAIN CIRCULATING PUMP	1		4639-502		8-13-70	23-39050	813-H1518-P	GENERAL ELECTRIC	4-6-71		4700#	250/62.5 HP., 600/300 RPM., 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., RIGID COUPLING.
	AUX. CIRCULATING PUMP	1		4639-502		8-13-70	23-39050	813-H1518-P	GENERAL ELECTRIC	4-6-71		1500#	60/15 HP. 720/360 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG. RIGID COUPLING.
	MAIN CONDENSATE PUMP	2		4639-502		8-13-70	23-39050	813-H1518-P	GENERAL ELECTRIC	4-6-71		700#	75 HP., 1200 RPM., 440 V. 3 PHASE, 60 HERTZ, CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	AUX. CONDENSATE PUMP	2		4639-502		8-13-70	23-39050	813-H1518-P	GENERAL ELECTRIC	4-6-71		320	20 HP. 1800 RPM 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG. FLEXIBLE COUPLING.
	LUB OIL SERVICE PUMP	2		4639-506		8-13-70	23-39050-A	813-H1533-P	GENERAL ELECTRIC	4-6-71		450#	50 HP. 1800 RPM., 440V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	LUB OIL TRANSFER PUMP	1		4639-506		8-13-70	23-39050-A	813-H1533-P	GENERAL ELECTRIC	4-6-71		95#	5 HP. 3600 RPM., 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, TOTALLY ENCLOSED HORIZ. MTG., FLEXIBLE COUPLING.
	FUEL OIL SERVICE PUMP	2		4639-506		8-13-70	23-39050-A	813-H1533-P	GENERAL ELECTRIC	4-6-71		395#	25/12.5 H.P. 1800/900 RPM., 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, HORIZ. MTG., FLEXIBLE COUPLING.
	DEISEL OIL PUMP (AUX. STARTING)	1		4639-506		8-13-70	23-39050-A	813-H1533-P	GENERAL ELECTRIC	4-6-71		59#	1 HP. 1800 RPM., 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, TOTALLY ENCLOSED. HORIZ. MTG., FLEXIBLE COUPLING.
	FUEL OIL TRANSFER PUMP	2		4639-506		8-13-70	23-39050-A	813-H1533-P	GENERAL ELECTRIC	4-6-71		2750#	60/30 HP., 600/300 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	STEERING GEAR PUMP	2		4639-508		8-13-70	23-39050-B	818-H1543-P	GENERAL ELECTRIC	4-30-71		1079#	75 HP. 1200 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS AT 15% LOAD FOLLOWED BY FULL LOAD FOR ONE HOUR, DRIPPROOF PROTECTED, HORIZ. MTG. FLEXIBLE COUPLING.
	FIRE PUMPS	2		4639-556		8-13-70	23-39050-C	813-H1541-P	GENERAL ELECTRIC	4-1-71		520#	75 HP. 3600 RPM., 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	BALLAST PUMP	1		4639-556		8-13-70	23-39050-C	813-H1541-P	GENERAL ELECTRIC	4-1-71		700#	125 HP. 1800 RPM., 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	MAIN BILGE PUMP (ENGINE ROOM)	1		4639-556		8-13-70	23-39050-C	813-H1541-P	GENERAL ELECTRIC	4-1-71		580#	50/12.5 HP., 1800/900 RPM., 440 V., 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.
	GENERL SERVICE PUMP	1		4639-556		8-13-70	23-39050-C	813-H1541-P	GENERAL ELECTRIC	4-1-71		1400#	125/56 HP. 1800/1200 RPM. 440 V. 3 PHASE, 60 HERTZ CONTINUOUS DUTY, DRIPPROOF PROTECTED, VERT. MTG., FLEXIBLE COUPLING.

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SEP 9, 10, 11, 12
BETHLEHEM STEEL CORP. JULY 1974
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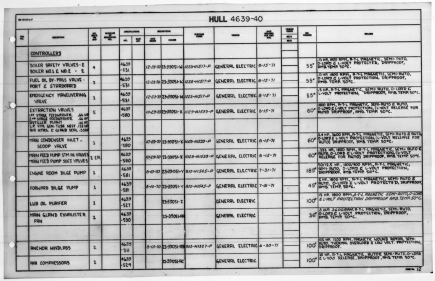
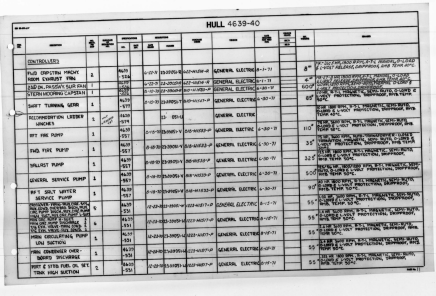


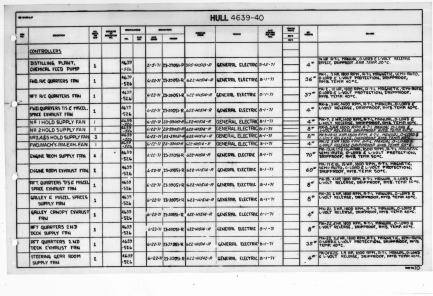
HULL 4639-40

NO.	NOMENCLATURE	SYM	QTY	MATERIAL	WEIGHT	DRAWING NO.	MANUFACTURER	CAPACITY	REMARKS
	CONTROLLERS								
	SOLID SAFETY VALVES-2 BOILER MEIS & MES	4		46/37-155	12-21-13	53-37006-3	46-2258-6237-A	GENERAL ELECTRIC	8-12"-73
	FUEL OIL BY PASS VALVE PORT & STARBOARD	1		46/37-155	12-28-14	53-37004-3	46-2258-6237-B	GENERAL ELECTRIC	8-12"-73
	EMERGENCY FIREWATERING VALVE	1		46/37-155	12-21-13	53-37005-3	46-2258-6237-C	GENERAL ELECTRIC	8-12"-73
	EXTINCTION VALVES (4 ITEMS DESIGNATED AS #1 ON DRAWING 46-2258-6237-D) (4 ITEMS DESIGNATED AS #2 ON DRAWING 46-2258-6237-D)	8		46/37-680	44-23-20	53-37007-3	46-2258-6237-D	GENERAL ELECTRIC	8-12"-73
	FIRE CONDENSER INLET - SCOOP VALVE	1		46/37-580	47-29-21	53-37010-3	46-2258-6238-A	GENERAL ELECTRIC	8-12"-73
	MAIN FEED PUMP STEAM VALVES	2 EA		46/37-580	47-29-21	53-37009-3	46-2258-6238-B	GENERAL ELECTRIC	8-12"-73
	MAIN FEED PUMP INLET VALVES	2 EA		46/37-580	47-29-21	53-37008-3	46-2258-6238-C	GENERAL ELECTRIC	8-12"-73
	ENGINE ROOM BILGE PUMP	1		46/37-581	48-40-22	53-37005-3	46-2258-6242-B	GENERAL ELECTRIC	7-10"-73
	FORWARD BILGE PUMP	1		46/37-581	48-40-22	53-37005-3	46-2258-6242-A	GENERAL ELECTRIC	7-10"-73
	LUB OIL PURIFIER	1		46/37-551		53-37005-3		GENERAL ELECTRIC	
	MAIN GLAND EVAPORATOR FAN	1		46/37-550		53-37004-3		GENERAL ELECTRIC	
	BOILER WATERS	1		46/37-551	12-21-13	53-37006-3	46-2258-6242-F	GENERAL ELECTRIC	8-12"-73
	AIR COMPRESSORS	1		46/37-554		53-37006-3		GENERAL ELECTRIC	



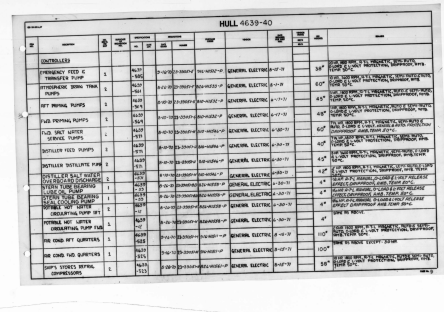
HULL 4639-40

NO.	NOMENCLATURE	SYM	QTY	MATERIAL	WEIGHT	DRAWING NO.	MANUFACTURER	CAPACITY	REMARKS
	CONTROLLERS								
	FWD DEPUTY FRONT HIGH EXHAUST FAN	1		46/37-554	1-27-9	53-37010-3	46-2258-6237-H	GENERAL ELECTRIC	8-11"-73
	AFT DEPUTY FRONT HIGH EXHAUST FAN	1		46/37-554	1-27-9	53-37009-3	46-2258-6237-J	GENERAL ELECTRIC	8-11"-73
	STERN WORKING CAPSTAN	1		46/37-554	2-10-12	53-37004-3	46-2258-6237-K	GENERAL ELECTRIC	8-11"-73
	SHIFT TURNING GEAR	1		46/37-554	2-10-12	53-37003-3	46-2258-6237-P	GENERAL ELECTRIC	8-10"-73
	RECIRCULATION LATHEY UNDERS	1	1/2	46/37-570	13-	53-37014-		GENERAL ELECTRIC	
	AFT FIRE PUMP	1		46/37-571	2-10-12	53-37005-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	FWD FIRE PUMP	1		46/37-571	2-10-12	53-37006-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	BALLAST PUMP	1		46/37-571	2-10-12	53-37007-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	GENERAL SERVICE PUMP	1		46/37-571	2-10-12	53-37008-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	AFT SALT WATER SERVICE PUMP	1		46/37-571	2-10-12	53-37009-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	FWD SALT WATER SERVICE PUMP	1		46/37-571	2-10-12	53-37010-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	MAIN CIRCULATING PUMP UNI SUCTION	2		46/37-551	17-12-12	53-37013-3	46-2258-6237-N	GENERAL ELECTRIC	8-12"-73
	MAIN EMERGENCY OVERBOARD DISCHARGE	1		46/37-550	17-12-12	53-37012-3	46-2258-6237-M	GENERAL ELECTRIC	8-12"-73
	DEEP & EXTRA FUEL OIL SETS TANK HIGH SUCTION	2		46/37-551	12-29-13	53-37011-3	46-2258-6237-L	GENERAL ELECTRIC	8-12"-73



HULL 4639-40

NO.	NOMENCLATURE	SYM	QTY	MATERIAL	WEIGHT	DRAWING NO.	MANUFACTURER	CAPACITY	REMARKS
	CONTROLLERS								
	DISTILLING PLANT, CHEMICAL FEED PUMP	1		46/37-554	2-2-13	53-37006-3	46-2258-6237-G	GENERAL ELECTRIC	8-12"-73
	FWD MK QUARTERS FAN	1		46/37-554	1-29-9	53-37005-3	46-2258-6237-E	GENERAL ELECTRIC	8-11"-73
	AFT MK QUARTERS FAN	1		46/37-554	1-27-9	53-37004-3	46-2258-6237-F	GENERAL ELECTRIC	8-11"-73
	FWD QUARTERS 115 C PASS. SPACE EXHAUST FAN	1		46/37-554	1-27-9	53-37003-3	46-2258-6237-D	GENERAL ELECTRIC	8-11"-73
	AFT HOLD SUPPLY FAN	1		46/37-554	1-27-9	53-37002-3	46-2258-6237-C	GENERAL ELECTRIC	8-11"-73
	FWD HOLD SUPPLY FAN	1		46/37-554	1-27-9	53-37001-3	46-2258-6237-B	GENERAL ELECTRIC	8-11"-73
	SPREAD HOLD SUPPLY FAN	3		46/37-554	1-27-9	53-37000-3	46-2258-6237-A	GENERAL ELECTRIC	8-11"-73
	FWD MOTOR ROOM EXHAUST FAN	1		46/37-554	1-27-9	53-37007-3	46-2258-6237-E	GENERAL ELECTRIC	8-11"-73
	ENGINE ROOM SUPPLY FAN	1		46/37-554	1-27-9	53-37008-3	46-2258-6237-F	GENERAL ELECTRIC	8-11"-73
	ENGINE ROOM EXHAUST FAN	1		46/37-554	1-29-9	53-37009-3	46-2258-6237-G	GENERAL ELECTRIC	8-11"-73
	AFT QUARTERS 115C MESS SPACE EXHAUST FAN	1		46/37-554	1-27-9	53-37010-3	46-2258-6237-H	GENERAL ELECTRIC	8-11"-73
	GALLEY C MESS SPACES SUPPLY FAN	1		46/37-554	1-27-9	53-37011-3	46-2258-6237-J	GENERAL ELECTRIC	8-11"-73
	GALLEY CANOPY EXHAUST FAN	1		46/37-554	1-27-9	53-37012-3	46-2258-6237-K	GENERAL ELECTRIC	8-11"-73
	AFT QUARTERS 143 MESS SUPPLY FAN	1		46/37-554	1-27-9	53-37013-3	46-2258-6237-L	GENERAL ELECTRIC	8-11"-73
	AFT QUARTERS 143 MESS EXHAUST FAN	1		46/37-554	1-27-9	53-37014-3	46-2258-6237-M	GENERAL ELECTRIC	8-11"-73
	STEERING GEAR ROOM SUPPLY FAN	1		46/37-554	1-27-9	53-37015-3	46-2258-6237-N	GENERAL ELECTRIC	8-11"-73



HULL 4639-40

NO.	NOMENCLATURE	SYM	QTY	MATERIAL	WEIGHT	DRAWING NO.	MANUFACTURER	CAPACITY	REMARKS
	CONTROLLERS								
	EMERGENCY FEED & THROTTLER PUMP	1		46/37-555	2-10-12	53-37004-3	46-2258-6232-M	GENERAL ELECTRIC	8-10"-73
	HYDRAULIC SERVO TANK PUMPS	2		46/37-551	2-12-13	53-37005-3	46-2258-6232-N	GENERAL ELECTRIC	8-11"-73
	AFT MAIN PUMPS	2		46/37-561	2-10-12	53-37006-3	46-2258-6232-P	GENERAL ELECTRIC	4-1750"-73
	FWD MAIN PUMPS	1		46/37-561	2-10-12	53-37007-3	46-2258-6232-P	GENERAL ELECTRIC	4-1750"-73
	FWD SALT WATER SERVICE PUMPS	1		46/37-571	2-10-12	53-37008-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	DISTILLER FEED PUMPS	1		46/37-571	2-10-12	53-37009-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	DISTILLER DISTILLATE PUMP	1		46/37-571	2-10-12	53-37010-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	DISTILLER SALT WATER EJECTOR PUMP	1		46/37-571	2-10-12	53-37011-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	STERN TUBE BEARING WATER SUPPLY PUMP	2		46/37-570	2-10-12	53-37012-3	46-2258-6232-P	GENERAL ELECTRIC	4-350"-73
	ORDERLY OFFICERS' MESS SPACE EXHAUST FAN	1		46/37-554	1-27-9	53-37016-3	46-2258-6237-P	GENERAL ELECTRIC	8-11"-73
	OFFICERS' MESS SPACE EXHAUST FAN	1		46/37-554	1-27-9	53-37017-3	46-2258-6237-Q	GENERAL ELECTRIC	8-11"-73
	AFT MAGAZINE SUPPLY FAN	1		46/37-554	1-27-9	53-37018-3	46-2258-6237-R	GENERAL ELECTRIC	8-11"-73
	FWD MAGAZINE SUPPLY FAN	1		46/37-554	1-27-9	53-37019-3	46-2258-6237-S	GENERAL ELECTRIC	8-11"-73
	FWD MK QUARTERS 1	1		46/37-554	1-27-9	53-37020-3	46-2258-6237-T	GENERAL ELECTRIC	8-11"-73
	AFT MK QUARTERS 1	1		46/37-554	1-27-9	53-37021-3	46-2258-6237-U	GENERAL ELECTRIC	8-11"-73
	SHIP'S STORES REFRIG. COMPRESSORS	1		46/37-555	2-10-12	53-37022-3	46-2258-6232-Q	GENERAL ELECTRIC	8-10"-73

HULL 4639-40

Item No.	Description	No. Req'd per Ship	Duplicate of Requisition No.	Specifications No.	Date App.	Requisitions Date Issued	Requisitions Number	Purchase Order	Vendor	Date Required for First Hull	Est. Weights	Remarks
	TEMPERATURE REGULATORS											
	LUB OIL PURIFIER HEATER	1		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 200 LB/HR., INLET PRESS. 35 PSIG., TEMP. 285°F., VALVE SIZE 1".
	MAIN LUB OIL COOLERS	2		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 1000 GPM, INLET PRESS. 3.5 PSIG., TEMP. 85°F., VALVE SIZE 10".
	MAIN FEED PUMP LUB OIL COOLERS	2		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 10 GPM INLET PRESS. 70 PSIG. TEMP. 85°F. OUTLET PRESS. 65 PSIG. VALVE SIZE 1"
	AUX. CONDENSATE RECIRCULATING VALVE	1		4639-44		9-1-10	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 25 GPM INLET PRESS. 85 PSIG. TEMP. 113°F. OUTLET PRESS. 50 PSIG. VALVE SIZE 1"
	SUPERHEAT TEMPERATURE CONTROL VALVES	2		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.			CAPACITY 31,000 LB/HR., INLET PRESS. 980 PSIG. TEMP. 585°F., VALVE SIZE 4"
	HOLD No1 FAN MK-7 (AXIAL)	1		4639-44		9-1-70	22-390	901-H1507-R	BUFFALO FORGE CO.	8-1-71	85#	HOLD #1 TO SUPPLY 2600 CFM AT 2.35 SP LOCATED IN HOLD #1 - 40°C. AMB. HORZ. MTD.
	HOLD No2 FAN MK-8 (AXIAL)	1		4639-38		6-11-71	22-39027	611-H1507-R	BUFFALO FORGE CO.	8-1-71	360#	HOLD #2 TO SUPPLY 3300 CFM AT 3.22 SP LOCATED IN HOLD #2 - 40°C AMB. HORIZ. MTD.
	HOLD No3 FAN MK-9 (AXIAL)	1		4639-38		6-11-71	22-39027	611-H1507-R	BUFFALO FORGE CO.	8-1-71	395#	HOLD #3 TO SUPPLY 4400 CFM AT 3.35 SP LOCATED IN HOLD #3 - 40°C. AMB. HORIZ. MTD.
	HOLD No4 FAN MK-10 (AXIAL)	1		4639-38		6-11-71	22-39027	611-H1507-R	BUFFALO FORGE CO.	8-1-71	395#	HOLD #4 TO SUPPLY 4975 CFM AT 3.0 SP LOCATED IN HOLD #4 - 40°C. AMB. HORIZ. MTD.
	HOLD No5 FAN MK-11 (AXIAL)	1		4639-38		6-11-71	22-39027	611-H1507-R	BUFFALO FORGE CO.	8-1-71	395#	HOLD #5 TO SUPPLY 4750 CFM AT 3.30 SP LOCATED IN HOLD #5 - 40°C. AMB - HORIZ. MTD.
	2ND DECK PASS FAN MK-29 (AXIAL)	1		4639-38		6-11-71	22-39027	611-H1507-R	BUFFALO FORGE CO.	8-1-71	300#	2ND DECK PASS'WAYS TO SUPPLY 4000 CFM AT 2.57 SP. LOCATED IN ATHWARTSHIP PASS. 2ND DK 40°C. AMB. HORIZ. MTD.

HULL 4639-40

Item No.	Description	No. Req'd per Ship	Duplicate of Requisition No.	Specifications No.	Date App.	Requisitions Date Issued	Requisitions Number	Purchase Order	Vendor	Date Required for First Hull	Est. Weights	Remarks
	TEMPERATURE REGULATORS											1" SARCO MODEL "D" H.C. REGULATOR + D-25 W&L MK.35
	QTRS. FWD. HEATER	1		4639-41		5-6-71	22-39016-B	506-H1513-R	SARCO MFG. CO.	9-1-71		1½" SARCO MODEL "D" H.C. REGULATOR D-29 W&L MK.36
	QTRS. AFT HEATER	1		4639-41		5-16-71	22-39016-B	506-H1513-R	SARCO MFG. CO.	9-1-71		1½" SARCO MODEL "G" H.C. REGULATOR-G-33-L MK.37
	DOWNSTREAM OF GALLEY & MISC. SPACES HEATER	1		4639-41		5-16-71	22-39016-B	506-H1513-R	SARCO MFG. CO.	9-1-71		1½" SARCO MODEL "E" H.C. REGULATOR-E-11-L MK.38
	2ND DECK AFT HEATER (P)	1		4639-41		5-16-71	22-39016-B	506-H1513-R	SARCO MFG. CO.	9-1-71		1½" SARCO MODEL "E" H.C. REGULATOR-E-12-L MK.39
	2ND DECK AFT HEATER (S)	1		4639-41		5-16-71	22-39016-B	506-H1513-R	SARCO MFG CO.	9-1-71		
	SLUDGE TANK	1		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 200 LB/HR., INLET PRESS. 142 PSIG., TEMP. 365°F., OUTLET PRESS. 65 PSIG., VALVE SIZE ½".
	FUEL OIL SETTLING TANK	2		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 500 LB/HR, INLET PRESS. 142 PSIG. TEMP. 365°F., OUTLET PRESS. 65 PSIG., VALVE SIZE ½".
	NO. 2B FUEL OIL TANK	2		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 1750 LB/HR., INLET PRESS. 131 PSIG., TEMP. 362°F, OUTLET PRESS. 75 PSIG., VALVE SIZE 1¼".
	NO. 4A FUEL OIL TANKS	2		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 2500 LB/HR., INLET PRESS. 138 PSIG., TEMP. 364°F., OUTLET PRESS. 70 PSIG., VALVE SIZE 1½".
	NO. 4B FUEL OIL TANKS	2		4639-44		9-1-70	22-39016	901-H1500-P	LESLIE CO.	8-1-71		CAPACITY 1500 LB/HR, INLET PRESS. 138 PSIG., TEMP. 364°F., OUTLET PRESS. 70 PSIG, VALVE SIZE 1¼".

HULL 4639-40

Item No.	Description	No. Req'd per Ship	Duplicate of Requisition No.	Specifications No.	Date App.	Requisitions Date Issued	Requisitions Number	Purchase Order	Vendor	Date Required for First Hull	Est. Weights	Remarks
	REDUCING & CONTROL VALVES											
	BURNER STEAM ATOMIZER	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 2000 LB/HR., INLET PRESS (MIN) 830 PSIG., TEMP. 620°F., PRESS (MAX) 870 PSIG., TEMP 551°F, OUTLET PRESS. 135 PSIG, VALVE SIZE 1".
	250 PSIG. DESUPERHEATED STEAM SYSTEM	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 34,000 LB/HR., INLET PRESS (MIN) 830 PSIG., TEMP. 620°F., PRESS (MAX) 810 PSIG., TEMP. 551°F., OUTLET PRESS. 250 PSIG., VALVE SIZE 2".
	AIR EJECTORS	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 4500 LB/HR, INLET PRESS. (MIN) 830 PSIG., TEMP. 620°F., PRESS (MAX) 870 PSIG., TEMP. 551°F, OUTLET PRESS. 150 PSIG., VALVE SIZE 1".
	LIVE STEAM MAKE-UP TO AUX. EXHAUST	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 36,000 LB/HR., INLET PRESS. (MIN) 250 PSIG., TEMP. 600°F., PRESS (MAX) 250 PSIG. TEMP 600°F., OUTLET PRESS. 29 PSIG., VALVE SIZE 3".
	EMERGENCY DESUPHT'D STM. TO 142 PSIG. CONTAM. STM. SYS.	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 18,500 LB/HR., INLET PRESS. (MIN) 250 PSIG., TEMP. 600°F., PRESS (MAX) 250 PSIG. TEMP. 600°F. OUTLET PRESS. 142 PSIG., VALVE SIZE 2½".
	35 PSIG. CONTAM. STEAM AFT.	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 1250 LB/HR., INLET PRESS. (MIN) 142 PSIG., TEMP. 365°F, PRESS (MAX) 142 PSIG. TEMP. 365°F, OUTLET PRESS. 35 PSIG., VALVE SIZE 1".
	BLEEDER STEAM MAKE-UP TO AUX. EXHAUST	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 6,000 LB/HR, INLET PRESS. (MIN) 55 PSIG. TEMP. 440°F., PRESS (MAX) 70 PSIG., TEMP. 470°F. OUTLET PRESS. 35 PSIG., VALVE SIZE 2½"
	AUX. EXH. UNLOADING VALVE TO MAIN & AUX. COND.	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 15,000 LB/HR, INLET PRESS. (MIN) 40 PSIG. TEMP. 300°F., OUTLET PRESS. 28.5" HGV. VALVE SIZE 4".
	MAKE-UP FEED VALVE FROM DIST. WATER TK. TO CONT. DR. TK.	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 40 GPM., INLET PRESS. (MIN) ATMO., TEMP. 188°F., OUTLET PRESS. 13.2 PSIA., VALVE SIZE 2".
	35 PSIG. CONTAMINATED STM. SYS., FWD.	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 500 LB/HR., INLET PRESS (MIN) 142 PSIG. TEMP. 365°F., OUTLET PRESS. 35 PSIG., VALVE SIZE ½".
	AIR GUARDIAN VALVE	1		4639-43		7-22-70	22-39018	722-H1510-P	LESLIE CO.	5-1-71		CAPACITY 100 SCFM., INLET PRESS. (MIN) 75 PSIG. (MAX) 125 PSIG., TEMP. 120°F., VALVE SIZE 1¼".

HULL 4639-40

Item No.	Description	No. Req'd per Ship	Duplicate of Requisition No.	Specifications No.	Date App.	Requisitions Date Issued	Requisitions Number	Purchase Order	Vendor	Date Required for First Hull	Est. Weights	Remarks
	CONTROLLERS											
	MAIN & AUX. COND. PUMPS	4		4639-503		8-17-70	23-39051-AD	818-H1516-P	GENERAL ELECTRIC	6-30-70	110# 70#	MN. (2) 75 HP. 1200 RPM. AUX. (2) 10 HP 1800 RPM A-T-L MAGNETIC, AUTO & SEMI-AUTO O-LOAD & L-VOLT RELEASE DRIPPROOF AMB. TEMP. 50°C.
	MAIN & AUX. CIRC. PUMPS	2		4639-582		8-26-70	23-39051-AE	826-H1536-P	GENERAL ELECTRIC	8-15-71	1100# 200#	MN. (1) 250/62.5 HP. 600/300 RPM A-T-L MAGNETIC AUTO & SEMI-AUTO. O-LOAD & L-VOLT PROTECTION. AUX. (1) 60/15 HP 720/360 RPM. A-T-L MAGNETIC, SEMI-AUTO O-LOAD & L-VOLT RELEASE, BOTH DRIPPROOF AMB. TEMP. 50°C.
	T/G SET LUB OIL PUMPS	2		4639-583		8-18-70	23-39051-AF	818-H1546-P	GENERAL ELECTRIC	6-30-70	65#	10 HP A-T-L MAGNETIC, AUTO & SEMI-AUTO, O-LOAD & L-VOLT RELEASE, DRIPPROOF, AMB. TEMP. 50°C.
	FORCED DRAFT BLOWERS	2		4639-521		10-5-70	23-39051-AG	1005-H1514-P	GENERAL ELECTRIC	7-15-71	950#	250/75/19 HP, 1800/1200/600 (#3-SPEED/#2-SPEED/#1-SPEED) RPM., A-T-L MAGNETIC, 2 WINDING AUTO & SEMI-AUTO, DRIPPROOF, AMB. TEMP. 50°C.
	MAIN FEED LUB OIL PUMPS	2		4639-584		8-10-70	23-39051-AH	810-H1531-P	GENERAL ELECTRIC	6-30-71	42#	¼ HP. (115 V. AC SINGLE PHASE) A-T-L, MAGNETIC, AUTO & SEMI-AUTO, O-LOAD & L-VOLT RELEASE, DRIPPROOF AMB. TEMP. 50°C.
	STEERING GEAR PUMPS	2		4639-509		8-10-70	23-39051-AJ	810-H1527-P	GENERAL ELECTRIC	AT ONCE	500#	75 HP, 1200 RPM, AUTO-TRANSFORMER-CLOSED TRANSITION, MAGNETIC, SEMI-AUTO, L-VOLT RELEASE, DRIPPROOF AMB. TEMP. 50°C.
	AUX. EXH. DUMP VALVE TO MAIN COND., 333 HP. AUX. EXH. DUMP VALVE TO AUX. COND., 333 HP. DIST. FD. HTR. DR. VALVE-MAIN COND., 133 HP. DIST. FD. HTR. DR. VALVE-MAIN COND., 133 HP.	4		4639-585		2-22-71	23-39051-AK	222-H1529-R	GENERAL ELECTRIC	8-15-71	55#	.333 & .133 HP., A-T-L, MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF AMB. TEMP. 50°C.
	OVERFLOW VALVE TO TANK #4B (P) OVERFLOW VALVE TO TANK #4B (S)	2		4639-585		2-22-71	23-39051-AK	222-H1529-R	GENERAL ELECTRIC	8-15-71	55#	1-HP-, A-T-L, MAGNETIC, SEMI-AUTO, O-LOAD & L-VOLT PROTECTION, DRIPPROOF AMB. TEMP. 50°C.
	OILY BILGE PUMP	1		4639-563		8-10-70	23-39051-AM	810-H1538-P	GENERAL ELECTRIC	6-30-71	30#	10 HP, 1800 RPM., A-T-L, MAGNETIC, SEMI-AUTO & AUTO, O-LOAD & L-VOLT RELEASE, DRIPPROOF AMB. TEMP. 50°C.
	MAIN FEED STOP VALVE MOTOR OPERATORS	2		4639-586		12-23-70	23-39051-AN	1223-H1511-P	GENERAL ELECTRIC	8-15-71	60#	0.37 HP, A-T-L MAGNETIC, SEMI-AUTO & AUTO, O-LOAD & L-VOLT PROTECTION, L-VOLT RELEASE FOR AUTO.- DRIPPROOF AMB. TEMP. 50°C.
	ASTERN GUARDIAN VALVE	1		4639-589		8-18-70	23-39051AF	818-H1546-P	GENERAL ELECTRIC	6-30-70	43#	.70-HP. A-T-L MAGNETIC SEMI-AUTO & AUTO, O-LOAD & L-VOLT PROTECTION L-VOLT RELEASE FOR AUTO. DRIPPROOF AMB. TEMP. 50°C.

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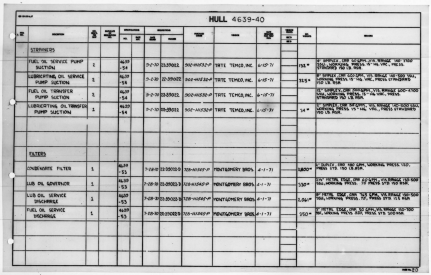
M-4639-371-6 ALT.-

M-422

Sht. 13, 14, 15, 16

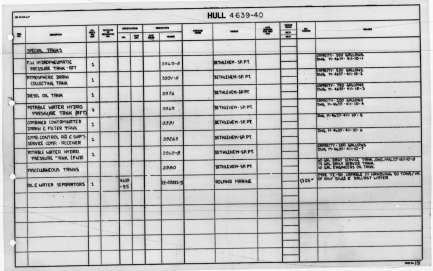
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

M-4639-37 & 41 - M-422
SM-17-16-14-20
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



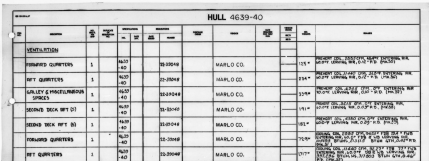
HULL 4639-40

ID	SYSTEMS	QTY	SPARE	DIMENSIONS				WEIGHT	MATERIAL			REMARKS
				W	L	H	DIA					
	SYSTEMS											
	FUEL OIL SERVICE PUMP SUCTION	1	46/59 -54			3'-0"	13.57011	560	4450 S.P.	TATE TEMCO, INC.	4-07-71	134 *
	LUBRICATING OIL SERVICE PUMP SUCTION	1	46/59 -54			3'-0"	12.57002	560	4450 S.P.	TATE TEMCO, INC.	4-07-71	135 *
	FUEL OIL TRANSFER PUMP SUCTION	1	46/59 -54			3'-0"	12.57011	560	4450 S.P.	TATE TEMCO, INC.	4-07-71	
	LUBRICATING OIL TRANSFER PUMP SUCTION	1	46/59 -54			3'-0"	12.57011	560	4450 S.P.	TATE TEMCO, INC.	4-07-71	14 *
	FILTERS											
	OVERBOARD FILTER	1	46/59 -53			7'-6"	13.57010	0	150	MONTGOMERY BROS.	4-11-71	1,800 *
	LUB OIL GravITY	1	46/59 -53			7'-10"	13.57003	0	150	MONTGOMERY BROS.	4-11-71	130 *
	LUB OIL SERVICE DISCHARGE	1	46/59 -53			7'-10"	13.57003	0	150	MONTGOMERY BROS.	4-11-71	1,260 *
	FUEL OIL SERVICE DISCHARGE	1	46/59 -53			7'-10"	13.57003	0	150	MONTGOMERY BROS.	4-11-71	252 *



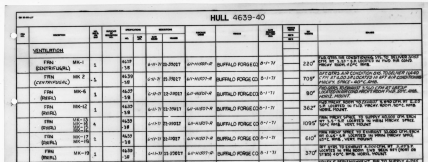
HULL 4639-40

ID	SYSTEMS	QTY	SPARE	DIMENSIONS				WEIGHT	MATERIAL			REMARKS
				W	L	H	DIA					
	SPECIAL TANKS											
	HYDROPNEUMATIC SALTWATER TANK (PT)	1							334-9-A	BETHLEHEM-SP. PT.		SHOWN ON ARR DRAWING FOR INFORMATION ONLY. TO BE SUPPLIED BY OTHERS.
	HYDROPNEUMATIC SEWAGE COLLECTING TANK	1							3201-A	BETHLEHEM-SP. PT.		CAPACITY 150 GALLONS MIN. TO BE SUPPLIED BY OTHERS.
	DEVIL OIL TANK	1							3976	BETHLEHEM-SP. PT.		CAPACITY 150 GALLONS MIN. TO BE SUPPLIED BY OTHERS.
	POTABLE WATER HYDRO PNEUMATIC TANK (PT)	1							3949	BETHLEHEM - SP. PT.		SEE M-4639-37 SH. 39 & 41
	CHEMICAL LIQUID-WASTE SEWAGE & FILTER TANK	1							3991	BETHLEHEM-SP.PT.		SEE M-4639-37 SH. 39 & 41
	CHEMICAL LIQUID-WASTE SEWAGE & SOFT SERVICE TANK - RECEIVER	1							3963	BETHLEHEM-SP.PT.		CAPACITY 1,500 GALLONS MIN. TO BE SUPPLIED BY OTHERS.
	POTABLE WATER HYDRO PNEUMATIC TANK (FWD)	1							3964-P-A	BETHLEHEM-SP.PT.		SEE ALSO SPECIAL TANK ARRANGEMENT DRAWING NO. 4639-4640 SHEET NO. 1 FOR DETAILS OF TANK.
	INSTRUMENTS TANKS								3980	BETHLEHEM-SP.PT.		
	OIL & WATER SEPERATORS	1	46/59 -55						13-00815-S	WELDING FABRIKE	1316 *	SEE TANK ARRANGEMENT DRAWING NO. 4639-4640 SHEET NO. 1 FOR DETAILS OF TANK.



HULL 4639-40

ID	SYSTEMS	QTY	SPARE	DIMENSIONS				WEIGHT	MATERIAL			REMARKS
				W	L	H	DIA					
	VENTILATION											
	FORWARD QUARTERS	1	46/59 -60				18.59048		MARLO CO.			135 *
	AFT QUARTERS	1	46/59 -60				27.59048		MARLO CO.			134 *
	GALLEY & MISCELLANEOUS SPACES	1	46/59 -60				30.59048		MARLO CO.			1394 *
	SECOND DECK AFT (P)	1	46/59 -60				33.59049		MARLO CO.			191 *
	SECOND DECK AFT (S)	1	46/59 -60				33.59048		MARLO CO.			181 *
	FORWARD QUARTERS	1	46/59 -60				33.59048		MARLO CO.			70 *
	AFT QUARTERS	1	46/59 -60				33.59048		MARLO CO.			2177 *
	DRIPPERS	2	46/59 -65			6'-8"	19.59625	6.69	4450 S.P.	SPECIALTY WIRE & MFG. CO. (SWECO) & VENT. CO. INCAFERTY ACT	7-12-70	2387 *
	DRIPPER	1	46/59 -65			6'-8"	19.59625	6.69	4450 S.P.	SPECIALTY WIRE & MFG. CO. (SWECO) & VENT. CO. INCAFERTY ACT	7-12-70	2387 *
	DRIPPERS	1	46/59 -65			6'-8"	16.59625	6.69	4450 S.P.	SPECIALTY WIRE & MFG. CO. (SWECO) & VENT. CO. INCAFERTY ACT	7-12-70	2387 *



HULL 4639-40

ID	SYSTEMS	QTY	SPARE	DIMENSIONS				WEIGHT	MATERIAL			REMARKS
				W	L	H	DIA					
	VENTILATION											
	FAN (ENGINE ROOM)	MX-1	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	2329 *
	FAN (CONDITIONING)	MX-2	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	7019 *
	FAN (GALLEY)	MX-6	1	46/59 -58		6'-8"	24.59025	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	807 *
	FAN (GALLEY)	MX-22	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	362 *
	FAN (GALLEY)	MX-10 MX-11 MX-12	3	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	1095 *
	FAN (GALLEY)	MX-13 MX-14	2	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	610 *
	FAN (GALLEY)	MX-15	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	274 *
	FAN (GALLEY)	MX-16	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	274 *
	FAN (GALLEY)	MX-20	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	548 *
	FAN (GALLEY)	MX-21	1	46/59 -58		6'-8"	33.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	2087 *
	FAN (GALLEY)	MX-22	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	4.42 *
	FAN (GALLEY)	MX-23	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	590 *
	FAN (GALLEY)	MX-24 MX-25	2	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	1312 *
	FAN (GALLEY)	MX-26	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	292 *
	FAN (GALLEY)	MX-27	1	46/59 -58		6'-8"	30.59027	6.69	4450 S.P.	BUFFALO FORGE CO.	4-19-71	438 *
	FAN (LONG EXHAUST)											

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M-4634-371-6
ALT.-
M-422
SHT 21, 22, 23, 24
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

HULL 4639-40

Item No.	Description	No. Req'd per Ship	Duplicate of Requisition No.	Specifications No.	Specifications Date App.	Requisitions Date Issued	Requisitions Number	Purchase Order	Vendor	Date Required for First Hull	Vendor Prints	Est. Weights	Remarks
	DRAIN REGULATORS												
	BOILER AIR HEATER	2		4639 -45		9-2-70	22-39017	902-H1514-P	LESLIE CO. % TATE TEMCO	8-18-71			CAPACITY 6,500 LB/HR., INLET PRESS. 47 PSIG. TEMP. 295°F., OUTLET PRESS. 17 PSIG., VALVE SIZE 1".
	FIRST STAGE FEED HEATER DRAIN COOLER	1		4639 -45		9-2-70	22-39017	902-H1514-P	LESLIE CO. % TATE TEMCO	8-18-71			CAPACITY 25,000 LB/HR., INLET PRESS. 9.6 PSIA, TEMP 125°F., OUTLET PRESS. 8.1 PSIA., VALVE SIZE 2"
	SECOND STAGE FEED HEATER DRAIN COOLER	1		4639 -45		9-2-70	22-39017	902-H1514-P	LESLIE CO. % TATE TEMCO	8-18-71			CAPACITY 10,000 LB/HR., INLET PRESS. 13 PSIG., TEMP 246°F., OUTLET PRESS. 11 PSIA., VALVE SIZE 1¼".
	LEVEL CONT. FOR FRESH WATER DRAIN COLL. TANK	1		4639 -45		9-2-70	22-39017	902-H1514-P	LESLIE CO. % TATE TEMCO	8-18-71			CAPACITY 70 GPM., INLET PRESS. 25 PSIG., TEMP 212°F, OUTLET PRESS 5 PSIG., VALVE SIZE 1¼".
	COMPRESSORS												
	SHIPS SERVICE & CONTROL AIR COMPRESSORS	2		4639 -57		7-16-70	22-39024	716-H1505-P	INGERSOLL-RAND	3-1-7		1920#	MODEL 25B, TYPE 40, VERT, SINGLE-ACTING, THREE CYLINDER, TWO STAGE AIR-COOLED TYPE FOR SHIPS SERVICE & CONTROL AIR SYSTEMS.
	LOUVERS												
	DIESEL GENERATOR ROOM	2		4639 -42			22-39484-C		JOHNSON SERVICE				70"X76" MULTILOUVERED VENTILATION DAMPER MODEL DA-3221-8-A: DAMPER MOTOR DESIGNED TO CHANGE THE DAMPER FROM FULL CLOSED TO FULL OPEN IN ONE MINUTE WHEN ENERGIZED.

HULL 4639-40

Item No.	Description	No. Req'd per Ship	Duplicate of Requisition No.	Specifications No.	Specifications Date App.	Requisitions Date Issued	Requisitions Number	Purchase Order	Vendor	Date Required for First Hull	Vendor Prints	Est. Weights	Remarks
	ENGINEERS EQUIPMENT												
	GRINDER	1		4639 -32		8-25-70	22-39015-B	825-H1532-P	CAREY MACH'Y. & SUPPLY CO. INC.	7-19-71		583#	DOUBLE WHEEL FLOOR TYPE-3-HWD-Y MODEL 203 WET & DRY TYPE DIRECT DRIVE COMBINATION, RUNNING ON HEAVY DUTY BALL BEARING. SIZE 12"X2"
	WELDER	1		4639 -572			23-39128		LINCOLN ELECTRIC				WEATERPROOF SUITABLE FOR MARINE SERVICE IN A 50°C. AMBIENT TEMP. TRANSFORMER TYPE 440 V. SINGLE-PHASE, 60 CYCLE, A.C., SHIP SUPPLY 30-450 AMPERES.
	UNIVERSAL MACHINE TOOL	1		4639 -65		—	23-39015	—	DAINICHI, KINZOKU KOGYO CO.	—		7,040#	DAINICHI TYPE DUM3-GA, COMBINATION-LATHE, SHAPER, DRILLING, & MILLING.
	WELDING & CUTTING OUTFIT	1		4639					PUROX				OXYGEN CYLINDER - 244 CU. FT. CAP., TYPE "K" ACETYLENE CYLINDER - 323 CU. FT. CAP., TYPE "WK"
	REFRIGERATION												
	REFRIGERATED AIR COOLER	1		4639 -48			22-39022-C		HANKINSON CORP.				MODEL F-200, CAPABLE OF PRODUCING A CONSTANT DEWPOINT OF 35°F AT PRESS. WHEN OPERATING AT A CAP. OF 150 SCFM, 125 PSIG. & 100°F. SAT. INLET AIR TEMP.
	SHIPS STORES REFRIGERATION PLANTS	1		4639 -35		6-30-70	22-39026	630-H1549-P	YORK DIV. BORG-WARNER	4-1-71		2,950#	DESIGNED FOR THE DIRECT EXPANSION OF REFRIGERANT 12, SHALL CONSIST OF TWO CONDENSING UNITS & FOUR AIR COOLERS.
	AIR CONDITIONING												
	AIR CONDITIONING HIGH SIDE EQUIPMENT	2		4639 -36		6-30-70	22-39028	630-H1549-P	YORK DIV. BORG-WARNER	4-1-71		5,500#	DIRECT EXPANSION TYPE DESIGNED FOR THE USE OF REFRIGERANT R-12. CONSIST OF TWO CONDENSING UNITS COMPLETELY PACKAGED BY THE VENDOR.
	CONTROL ROOM AIR CONDITIONING PLANT	2		4639 -37		6-19-70	22-39028-A	619-H1547-P	THERM-AIR MFG. CO.	5-1-71		975#	7½ TON MODEL MCMAC-7½ - SELF CONTAINED USING R-22 - DELIVERING 2675 CFM

HULL 4639-40

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	DECK MACHINERY												
	STEERING GEAR	1		4639 -15		6-17-70	21-39025	617-H1522-P	LIDERWOOD MFG. CO.	4-1-71			FOUR CYLINDER ELECTRIC HYDRAULIC TYPE, WITH TWO OPPOSED 10½" DIA. PARALLEL RAMS, DRIVING THE CROSSHEAD, WITH A 27" RADIUS, THROUGH RAPSON SLIDES.
	WINCHES	4		4639 -17		7-24-70	21-39025-B	724-H1550-P	MARKEY MACHINERY CO., INC.	7-1-71			WINCH SHALL BE CAPABLE OF DEVELOPING A 30,000 LB. LINE PULL AT ABOUT 75 F.P.M. AVERAGE LINE SPEED FIVE POINT REVERSING SPEED CONTROL
	ANCHOR WINDLASS	2		4639 -16		6-23-70	21-39025-A	623-H1547-P	WESTERN GEAR CORP.	7-1-71			CAPABLE OF HOISTING A BOWER ANCHOR WEIGHING 12,000 LBS. & 30 FATHOMS OF 2⅞" HIGH STRENGTH STUD LINK CHAIN FROM 30 FATHOMS.
	STERN MOORING CAPSTAN	1		4639 -20		6-23-70	21-39025C	623-H1548-P	WESTERN GEAR CORP.	4-1-71			CAPABLE OF DEVELOPING A 26,000 LB. PULL AT 60 F.P.M. LINE SPEED WITH AN 8" CIRCUMFERENCE POLYPROPYLENE LINE.
	ACCOMMODATION LADDER & WINCH	2	NOT ORDERED	4639 -22			21-39373		WASHINGTON ALUMINUM CO.				50'8" LONG LADDERS (1) PORT (1) STBD. WINCH FOR RAISING & LOWERING THE LADDER WILL HAVE A LINE SPEED OF 30 TO 40 FT. PER MIN.
	STORES HANDLING CRANES	2		4639 -18		11-5-70	21-39025-E	1105-H1507-P	A.C. HOYLE CO.	8-1-71			2000 LBS. CAPACITY WHEN FULLY EXT. IN A HORIZ. POSITION AT A HOISTING SPEED OF 90 F.P.M. BOOM FULLY RETRACTED 14'4", EXTENDED 30'
	STEWARD'S STORES CRANES	2		4639 -14		11-5-70	21-39025-F	1105-H1508-P	A.C. HOYLE CO.	9-1-71			ELECTRIC-HYDRAULIC, 1000 LBS. CAPACITY CRANE WITH A RIGID BOOM. (1) PORT (1) STBD. 26 FT. OUTREACH WITH BOOM IN HORIZ. POSITION. HOIST SPEED 60 F.P.M.
	HOSE HDLG. CRANES	2		4639 -13		11-5-70	21-39025-D	1105-H1506-P	A.C. HOYLE CO.	8-1-71			ELECTRIC-HYDRAULIC, 2000 LBS. CAPACITY AT 12'-10" OUTREACH, HOISTING SPEED OF 50-60 F.P.M. 12'-10" OUTREACH, 6'-6" RETRACTED.
	LIFEBOATS, DAVITS & WINCHES	2				3-1-71	21-39738	301-H1523-R	LANE MARINE TECH. INC.	10-5-71	—		(1) DIESEL PROPELLED (1) OAR PROPELLED LIFEBOAT 26'-0" 43 PERSON (2) GRAVITY DAVITS FOR LIFEBOATS (2) ELECTRIC OPERATED WINCHES

HULL 4639-40

Item No.	Description	No. Req'd per Ship	Duplicate of Requisition No.	Specifications No.	Specifications Date App.	Requisitions Date Issued	Requisitions Number	Purchase Order	Vendor	Date Required for First Hull	Vendor Prints	Est. Weights	Remarks
	HEAT TRANSFER EQUIPMENT												
	1ST STG. FD. HTR., DR. CLR., & GLAND EXH. CONDENSER	1		4639 -25		7-31-70	22-39004	731-H1512-P	AQUA-CHEM. INC.	4-15-71	—	8050#	SIZE 6U-AX-120D HORIZONTAL, STRAIGHT TUBE, 6 PASS COMBINED UNIT. CAP. TO HEAT 195,700 LBS. PER HR. OF FEED WATER FROM 94°F TO 175°F. WITH A CLEAN TUBE FACTOR OF 90%
	CONT. STEAM EVAP.	1		4639 -46		7-31-70	22-39004-E	731-H1523-P	AQUA-CHEM. INC.	4-15-71	—	9700#	SIZE 48 X 120/2V-126C, HORIZONTAL, SUBMERGED U-TUBE TYPE, SUITABLE FOR MARINE SERVICE.
	EVAP. DRAIN COOLER	1		4639 -46		7-31-70	22-39004-E	731-H1523-P	AQUA-CHEM. INC.	4-15-71	—	1050#	SIZE 4F-710 UNIT CONSISTING OF TWO SHELL & U-TUBE DRAIN COOLERS CONNECTED TOGETHER TO FORM A SINGLE UNIT.
	CONT. DRAIN COOLER	1		4639 -46		7-31-70	22-39004-E	731-H1523-P	AQUA-CHEM. INC.	4-15-71	—	630#	SIZE 4F-60C SHELL & U-TUBE UNIT. SHALL COOL DRAINS FROM MISCEL. HEATING SYS. ON THE SHELL SIDE WITH SEA WATER PASSING THROUGH THE TUBES
	DEARATING FEED WATER HEATER	1		4639 -26		7-31-70	22-39006	731-H1522-P	AQUA-CHEM. INC.	6-1-71	—	12,000#	MODEL 240 VERTICAL, SINGLE SHELL, MARINE SPRAY TYPE WITH AN INTERNAL DIRECT CONTACT VENT CONDENSER. FEED INLET FLOW 186,000 LB/HR. TEMP. 220°F.
	FUEL OIL HEATERS	2		4639 -28		7-31-70	22-39008	731-H1511-P	AQUA-CHEM. INC.	4-15-71	—	580#	SIZE F-84DE19 HORIZ. MARINE TYPE UNITS. CAPACITY TO HEAT 17030 LBS. PER. HR. OF FUEL OIL FROM 90°F. TO 250°F. WHEN SUPPLIED WITH SAT. STEAM AT 50 PSIG.
	LUB OIL HEATER	1		4639 -28		7-31-70	22-39008	731-H1511-P	AQUA-CHEM. INC.	4-15-71	—	125#	CAPACITY TO HEAT 795 GALLONS PER HR. OF LUB OIL FROM 105°F. TO 135°F. WHEN SUPPLIED WITH 35 PSIG. STEAM. SIZE A-48-DE19 HORIZ. MARINE TYPE UNIT.
	LUB OIL COOLER	2		4639 -28		7-31-70	22-39008	731-H1511-P	AQUA-CHEM. INC.	4-15-71	—	3,150#	SIZE P-144CD-19, SHALL COOL ABOUT 606 GPM. OF TURBINE LUB OIL FROM 131° TO 113°F. WHEN SUPPLIED WITH ABOUT 630 GPM. OF 90°F. CIRC. WATER.
	FRESH WATER HEATERS	2		4639 -27		7-1-70	22-39009	701-H1506-P	LESLIE CO.	4-15-71	—	260#	MODEL CM-320C, CAPABLE OF HEATING 30 GPM. OF POTABLE WATER FROM 50°F. TO 150°F. WHEN SUPPLIED WITH 142 PSIG. STEAM AT SAT. TEMP.
	DISTILLING PLANT	2					QA80 775A-F QAO 39-600		BETHLEHEM STEEL		—		15,000 GALLONS PER DAY.
	2ND STAGE FEED HEATER	1		4639 -25		7-31-70	22-39006	731-H1512-P	AQUA-CHEM CO.	4-15-71	—	2,845#	PARACOIL SIZE 4A-120D HORIZ. STRAIGHT TUBE 4 PASS WITH CAPACITY TO HEAT 195 700 LBS/HR FROM 175°F. TO 220°F. WITH CLEAN TUBE FACTOR OF 90%

M-434 3714 Alt - M-432 SHT 25,26,27,28

BETHLEHEM STEEL CORP. JULY 1974 H 639-4640 8X

ITEM	NOMENCLATURE	QUANTITY	SPARE	DRAWING NO.	WEIGHT	MANUFACTURER	MAKER'S TYPE OR MODEL NO.	REMARKS
	MISCELLANEOUS EQUIPMENT							
	WHISTLE	1		46J9-5-8	7 LBS	LESLIE CO.	10-M1202-P	
	INSTALLING PAINT CHEM. FEED SYSTEM	1		46J9-5-8	6 CYS	BELL & ROBERTS	6-M1202-P	
	INSTRUMENTATION	1		46J9-5-8	7 CYS	MECHANICAL ELEVATION	7-M1202-P	
	SMOKE, DOUSE FIRE EXTINGUISHING SYSTEM	1	ANY	46J9-5-8	25 LBS	UNITED HOSE CO.		
	SHIP TRACKERS	3		46J9-5-8	10.00 LBS	10-M1202-P	SURVEY TRACKER	
	SMOKER CHAIRS	1		46J9-5-8	10.00 LBS	10-M1202-P	SURVEY TRACKER	
	WIND STRIPPERS	1		46J9-5-8	25 LBS		GROOVY WINDS	
	ECHO DEPTH SOUNDING SYSTEM	1		46J9-5-8	25 LBS		ECT MEKANY MIRING	
	MISSING MECHANES	4	ANY	46J9-5-8	4 LBS		NUSPRING MORNERS	
	CLOTHES DRYERS	6	ANY	46J9-5-8	24 LBS		NUSPRING & SUSPELS	

ITEM	NOMENCLATURE	QUANTITY	SPARE	DRAWING NO.	WEIGHT	MANUFACTURER	MAKER'S TYPE OR MODEL NO.	REMARKS
	WALL ENTING & FIRDAMS							
	STERN TUBE BEARINGS & SEALS	1		46J9-5-8	4.07 LBS	10-M1202-P	422-M1202-P	
	STERN FERRIE	1		46J9-5-8	7.0 LBS	10-M1202-P	1000-M1202-P	
	PROPELLER	1		46J9-5-8	41.4 LBS	10-M1202-P	44-M1202-P	
	RUDDER SOCKS SLEEVE	1		46J9-5-8	2.0 LBS	10-M1202-P	2473-M1202-P	
	PROPELLER SHAFT NUT & KEY	1		46J9-5-8	2.0 LBS	10-M1202-P	1000-M1202-P	
	LINE SHAFT FORGINGS	1		46J9-5-8	2.0 LBS	10-M1202-P	1000-M1202-P	
	LINE SHAFT BEARINGS	1		46J9-5-8	7.0 LBS	10-M1202-P	1000-M1202-P	
	RUDDER & RUDDER HORN	1		46J9-5-8	3.0 LBS	10-M1202-P	1000-M1202-P	

ITEM	NOMENCLATURE	QUANTITY	SPARE	DRAWING NO.	WEIGHT	MANUFACTURER	MAKER'S TYPE OR MODEL NO.	REMARKS
	ELECTRICAL EQUIPMENT							
	AUTOMATIC BATTERY CHARGER	1		46J9-5-8	25 LBS		6/8 BERTH PILOT	
	PETERLIGHT & BURNS							
	VALVITY INDICATOR PANELS	4		46J9-5-8	8.0 LBS	10-M1202-P	10-M1202-P	PL HARD, INC
	CLARITY INDICATOR	1		46J9-5-8	5.0 LBS	10-M1202-P	427-M1202-P	BALL & ROBERTS
	SHIFT LEVEL INDICATOR PANEL	1		46J9-5-8	25 LBS		25 27088	FEEDBACK SYSTEMS

ITEM	NOMENCLATURE	QUANTITY	SPARE	DRAWING NO.	WEIGHT	MANUFACTURER	MAKER'S TYPE OR MODEL NO.	REMARKS
	ELECTRICAL EQUIPMENT							
	MAIN SWITCHBOARD	1		46J9-5-8	12 TONS		MARINE ELECTRONICS	
	EMERGENCY SWITCHBOARDS	1		46J9-5-8	12 TONS		MARINE ELECTRONICS	
	ELECTRICAL TEST PANEL	1		46J9-5-8	12 TONS		MARINE ELECTRONICS	
1	TRANSFORMERS	3		46J9-5-8	12 TONS		GENERAL ELECTRIC	
2	TRANSFORMERS	4		46J9-5-8	12 TONS		GENERAL ELECTRIC	
3	TRANSFORMERS	3		46J9-5-8	12 TONS		GENERAL ELECTRIC	
4	TRANSFORMER	1		46J9-5-8	12 TONS		GENERAL ELECTRIC	
5	TRANSFORMERS	11		46J9-5-8	12 TONS		GENERAL ELECTRIC	
6	TRANSFORMERS	4		46J9-5-8	12 TONS		GENERAL ELECTRIC	
7	TRANSFORMERS	6		46J9-5-8	12 TONS		GENERAL ELECTRIC	
8	TRANSFORMERS	2		46J9-5-8	12 TONS		GENERAL ELECTRIC	
9	TRANSFORMERS	3		46J9-5-8	12 TONS		GENERAL ELECTRIC	
10	TRANSFORMERS	3		46J9-5-8	12 TONS		GENERAL ELECTRIC	
11	TRANSFORMERS	3		46J9-5-8	12 TONS		GENERAL ELECTRIC	
12	TRANSFORMERS	3		46J9-5-8	12 TONS		GENERAL ELECTRIC	

VICE	REMARKS	ASTM SPECS	REQ. NO.	REQ. NO.
		A-181 GR. 1	39383-K	
			39383-K	
	TUBE TURN PT. 50		39383-B	
,75,21,83,58,59				
16,17,75,82,82-1,84				(4) 39443
2,47,51,51-1,81-1,84,81,15,76,14,22,37-1,57,38-1,38				
30,31,52,56,58,61,63,65				
4,39-1,39,26,48,49,48-1,86,87,87-1,87-2,87-3				
,61,63,65				
E FOR SCH. 40	150			
80			39383-H	
OR 6" SCH. 40 PIPE		A-36	# UAO	
. 10 STD. PIPE			# UAO	
34 1/4" x 48 1/4" x 1 1/2" THK.			# UAO	
		A-181 GR. I	39383-B	
			39443	
			39385-C	
			39385-C SUP. SHT.	
			39-84-1323	
) 3"x1/8" THK STRIP x 30FT. LG.	TO BE DRILLED BY YARD		UAO 39385-C	

ITTINGS - CONT.

CATALOG DRWG. NO.	SERVICE	REMARKS	ASTM SPEC.	REQ. NO.
EF-496 FIG 1	AUX. EXH.		A-53 O.H.F.W.	*UAO-39139

* NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED

LIST OF VALVES AND FITTINGS

ALT NO.	PIECE NO.	AMT	SIZE	PRESS	MATERIAL	DESCRIPTION	CATALOG OR DRWG. NO.	SERVICE	REMARKS	ASTM SPEC.	REQ. NO.
	E-1	3	34"	50#	CAST STL S.S TRIM	GATE VALVE, F&D, OS&Y, RISING STEM, MOTOR OP.	ANCHOR FIG. 50-1F	AUX. EXHAUST & BLEEDER STM.		A-216 WCB	39440
	E-1A	1	34"			SAME AS E-1 BUT WITH OPERATOR ROTATED 180°					
	E-2	1	12"	150#		ANGLE STOP CHECK VALVE, FLGD, F&D	POWELL FIG. 1578		NON-CHATTERING TYPE		
	E-3	2	8"		CAST STL. S.S. TRIM	ANGLE STOP CHECK VALVE, FLGD. F&D, MOTOR OP.	POWELL FIG 1578 MOD				
	E-4	1	8"			ANGLE STOP CHECK VALVE, F&D, MOTOR OP.	POWELL FIG 1578 MOD.				
	E-5										
	E-6	2	6"			ANGLE LIFT CHECK VALVE, FLGD, SPRING LOADED, STAY OPEN TYPE	LUNKENHEIMER DRWG. 2537-X-1 MODIFY TO CAST STL.		SET AT 3LB. EXHAUST STEAM PRESSURE		39440
	E-7	4	6"			GATE VALVE, F&D, OS&Y, RISING STEM, S.W. DISC, FLGD.	POWELL FIG. 1503 FE				
	E-7A	2	6"			GATE VALVE, F&D, OS&Y, FLGD. RISING STEM, S.W. DISC, MOTOR OP.	POWELL FIG 1523				
	E-8	2	4"			GATE VALVE, F&D, OS&Y, RISING STEM, S.W. DISC, FLGD.	POWELL FIG. 1503 FE				
	E-9	1	3"			ANGLE VALVE, F&D, FLGD.	POWELL FIG. 1533 FE				39440-A)X
	E-10	1	5"			ANGLE VALVE, F&D, FLGD.	POWELL FIG. 1533 FE				39440
	E-11	1	6"			GLOBE STOP CHECK VALVE, F&D, FLGD.	POWELL FIG. 1576		SLEEVE GUIDED NON-CHATTERING TYPE		
	E-12	1	10"			ANGLE STOP CHECK VALVE, F&D, MOTOR OP, FLGD.	POWELL FIG 1578 MOD.		NON-CHATTERING TYPE		
	E-13	1	4"			GLOBE VALVE, F&D, FLGD.	POWELL FIG 1531 FE				
	E-14	2	4"			GLOBE VALVE, F&D, FLGD.	POWELL FIG. 1531 FE				
	E-15	1	2"			GLOBE VALVE, F&D, FLGD.	POWELL FIG. 1531 FE				
	E-16	1	4"			GATE VALVE, F&D, OS&Y, RISING STEM, S.W. DISC, FLGD.	POWELL FIG 1503 FE				
	E-17	1	3/4"	200#	BRONZE	HOSE VALVE, SCRD., GATE, UNION BONNET	POWELL FIG 375 HS		WITH CAP & CHAIN	B-61	
	E-18	1	40"	50#	S.S.	5 CONVOLUTION EXPANSION JOINT, 125# DRILL	PATHWAY BELLOWS FF TYPE			TYPE-304	39446
	E-18A	2	34"			4 CONVOLUTION EXPANSION JOINT	PATHWAY BELLOWS PART NO. FF34-50-4				39446
	E-19	11	6"		SEAMLESS STL.	90° L.R. ELBOW, STD. WT.	TUBE TURN #1	6,7,8,9,10-1,38-1,38,37,51-1,74		A-234 GR. WPA	39380-B
	E-20	1	8"x6"			90° L.R. RED. ELBOW, STD. WT.	#12	82			
2	E-21	6	4"			90° L.R. ELBOW, STD WT.	#1	78,78-1,78-4,50,39-1,87			
	E-22	2	1"	3000#	FORGED STEEL	SCRD. UNION, STEEL TO STEEL SEATS	WATSON-STILLMAN #800			A-105 GR. 2	SUPPLY SHT. 39-84-1323
6²	E-23	14	8"		SEAMLESS STL.	90° L.R. ELBOW, STD WT.	TUBE TURN #1	42,42-1,17,11,12,82,18		A-234 GR. WPA	(5)39-84-1323 (16)39380-B
	E-24	9	10"			90° L.R. ELBOW, STD WT.	#1	13,14,83,84,85,21	.365" WALL THK.		(3)39-84-1323 (6)39380-B
5³	E-25	2	12"			90° L.R. ELBOW, STD WT.	#1	25	.375" WALL THK.		(1)39444-B-1X (1)39380-K-1X (1)39380-K
	E-26	1	6x5"	150#	CAST STL.	REDUCER, FLGD, F&D, CONCENTRIC	GLOVER CODE 1513			A-216 GR. WCB	39381-D
	E-27	1	12"x5"		SEAMLESS STL.	REDUCER, STD WT.	TUBE TURN #90	27	.375" WALL THK. LG. END X .258" WALL THK. SM. END	A-234 GR. WPA	39380-B
	E-28	1	16"x10"			REDUCER, STD. WT.	#90		.375" WALL THK. BOTH ENDS		
	E-29	7	5"x3"			REDUCER, STD. WT.	#90	61,62,63,64,65,66,56			
	E-30	2	10"x5"			REDUCER, STD WT.	#90	58,59	.365" WALL THK. LG. END X .258" WALL THK. SM. END		
	E-31	2	3"			90 L.R. ELBOW, STD WT	#1	56,57			
	E-32	2	4"x2"			L.R. RED. ELBOW, STD WT.	#12	49,50			
5	E-33	1	12"x10"			REDUCER, STD WT., CONCENTRIC	#90	21	.375" WALL THK. LG. END X .322" WALL THK. SM. END		39444
	E-34	4	5"			L.R. ELBOW, STD WT.	#1	80,81,61,62			(2)39-84-1323 (2)39380-B
	E-35	1	6"x4"			REDUCER, STD. WT. CONCENTRIC	#90	47			39380-B
	E-36	5	8"x6"			REDUCER, STD WT.	#90	37,38,45			(4)39380-K (1)39380-B
	E-37	1	5"x4"			REDUCER, STD WT	#90	80			39380-B
	E-38	2	14"			CAP, STD. WT.	#80	60,89	.375" WALL THK.		(2)39380-K (2)39380-B
	E-39	1	4"	150#	CAST STL.	STRAINER, Y TYPE, FLGD, F&D STAINLESS STEEL SCREENS WITH .033 PERFORATIONS	MUELLER FIG. 761	AUX. EXH. UNLOADING STN.		A-216 GR. WCB	39381-D
	E-40	1	2 1/2"			STRAINER, Y TYPE, FLGD, F&D		40			
	E-41	2 PR.	4"			ORIFICE FLGS.		DISTILLERS	SEE REF. NO. 4		—
	E-42	2 ASS.				AIR HEATERS	AEROFIN X9056	P&S BOILER CASINGS			39001-D
	E-43	8	12"x3/4"		FORGED STEEL	SOCKOLET-IPS RUN & OUTLET STD. WT.	BONNEY FORGE	L.P. BLEEDER STEAM LOW POINT DRAINS L.O. WARMING HOSE CONN.		A-105 GR. 2	39382-C
2	E-44	13	6"x1/2"			SOCKOLET-IPS RUN & OUTLET STD. WT.		DRAINS & TAKE OFFS			39382-G
	E-45	1	1"	3000#	FORGED STEEL	THREADOLET, STD. WT.; I.P.S. RUN & OUTLET		PIPE 91 CONTROL VALVE PILOT		A-105 GR. 2	39382-C
	E-46	2			STL. PLATE	TRANSITION PIECES 36"x72"x3/8"		COND. TO TURBO-GEN. SEE DETAIL #1		A-36	* UAO
	E-47	1	5"x4"	150#	CAST STL.	REDUCER, FLGD., F&D; CONCENTRIC	GLOVER CODE 1513	53			39381-D
	E-48	8	3"	150#	S S	FLEXIBLE PIPE, WELD END ASSEMBLY	PATHWAY BELLOWS	SAFETY VALVE ESCAPES	MUST HANDLE .46875" VERTICLE AND .1875" LATERAL MOVEMENT	TYPE-304	39446
	E-49	2	8"x1"		FORGED STL.	SOCKOLET-IPS RUN & OUTLET STD. WT.	BONNEY FORGE	56,57		A-105 GR. 2	39382-C
	E-50	1	3"x2 1/2"	150#	CAST STL.	REDUCER, FLGD, F&D, CONCENTRIC	GLOVER CODE 1513	40		A-216 GR. WCB	39381-D
	E-51	1	4"	40#	CARBON STL.	AUX. EXH. UNLOADING VALVE	LESLIE CO. CLASS DDL S-1X			A-216 GR. WCB	39018
	E-52	1	2 1/2"	58#-35#		PRESS. RED. VALVE	LESLIE CO. CLASS DDOS	H.P. BLEEDER STM.			39018
2¹	E-53	5	36-3 x 1/4"	3000#	STL.	THREADOLETS-IPS RUN & OUTLET	BONNEY FORGE	PRESSURE GAGES		A-105 GR. 2	39382-G(2) 39382-C
	E-54	1	17"x17"		STL. PL.	BUTT END 1/2" THK.				A-34	* UAO
	E-55	3	3/8"	8000#	FORGED STEEL	THREADOLET, I.P.S. RUN & OUTLET	BONNEY FORGE	THERMOMETERS		A-105 GR. 2	39382-C
	E-56	2	3"x2 1/2"		SEAMLESS STL.	90° L.R. RED. ELBOW, STD. WT.	TUBE TURN 12	79,77		A-234 GR. WPA	(2)39380-K (2)39380-B
	E-57	3	10"x8"			REDUCER, STD. WT.	90	75,84	.365" WALL THK. LG. END X .322" WALL THK. SM. END		39380-B
5³	E-58	1	12"			45° ELBOW, STD. WT.	TUBE TURN 5	25	.365 WALL THK.	A-234 GR. WPA	22-39444-B
	E-59	1	10"x8"		SEAMLESS STL.	90° L.R. RED. ELBOW, STD WT.	TUBE TURN 12	83	.365" WALL THK. LG. END X .322" WALL THK. SM. END	A-234 GR. WPA	39380-B
	E-60	1	10"			45° ELBOW, STD WT.	5	83	.365" WALL THK.		39380-K
	E-61	1	5"x4"			90° L.R. RED. ELBOW, STD. WT.	12	80			39380-K
	E-62	10	1/2"	3000#	FORGED STL.	THREADOLET - I.P.S RUN & OUTLET	BONNEY FORGE	ESCAPE LINES		A-105 GR. 2	39382-C
	E-63	2	1"	200#	BRONZE	GATE VALVE, SCRD., UNION BONNET, RISING STEM	POWELL FIG. 375-S	91		B-61	39440
	E-64	1	40"x34"		STL	TRANSITION PIECE 3/8" THK.				A-36	* UAO
	E-65	3	3/4"	3000#	FORGED STL.	SCRD. HALF COUPLING	WATSON-STILLMAN #1230			A-181 GR. 1	39381-D
	E-66	2	6"		SEAMLESS STL.	90° S.R. ELBOW, STD. WT.	TUBE TURN PT. #3	37-1		A-234 GR. WPA	39380-K
	E-67	1	2 1/2"x4"	150#		REDUCER FLGD, F&D CONCENTRIC	GLOVER CODE 1513	40			39381-D
	E-68	1	4"x3"			90° L.R. RED ELBOW, STD WT.	TUBE TURN 12	78			39380-B
2	E-69	2	6"x3/4"		FORGED STL.	SOCKOLET IPS RUN & OUTLET STD. WT.	BONNY FORGE	37, 38		A-181 GR. 1	39382-G
6²	E-78	2	8"		SEAMLESS STL.	90° L.R. ELBOW, STD. WT.	TUBE TURN #1	AUX. EXHAUST & BLEED STM.	HULL 4640 ONLY	A-234 GR-WPA	39-84-1323

GENERAL NOTES

1. ALL PIPES FITTINGS & VALVES ARE TO MEET THE REQUIREMENTS OF THE U.S.C.G. & THE AMERICAN BUREAU OF SHIPPING.
2. ALL MATERIALS SHALL BE TO THE MANUFACTURERS LISTED STANDARDS OR EQUAL.
3. ALL PIPING SHOWN ON THIS DRWG. IS DETAILED UNDER SYSTEM NO.
4. ALL DIMENSIONS ARE TO PIPE ℄ FLANGE FACES & STRUCTURAL MOULDED LINES.
5. ALL PIPES PENETRATING FLATS TO HAVE 3" COAMING AROUND.
6. DRAINS TO BILGE TO BE GROUPED WHERE PRACTICABLE AND LED TO NEAREST DRAIN WELL OR BILGE DRAIN MAIN.

ALTERATIONS (CONT'D)

NO	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
6 CONT'D	12/13/71		2 (CONT'D) FOR REMOVAL OF MN. RED. GEAR COVER AS SHOWN IN MAIN BODY OF PLAN, FOR HULL 4640 ONLY. IN B/M - INCREASED ITEMS (24 TO 26 & E-23 (12 TO 14). ADDED F-78 FOR HULL 4640 ONLY	W.H.T.	
	12/4/72		3. REVISED RUN OF PIPES 84, 83, 82-1, 87-1, 81-1 & 85 TO PROVIDE CLEARANCE FOR MN. STM. INSULATION & TO SUIT SCN # 129 (M-89)	G.L.W.	
7	1/5/73		1. RELOCATED EXH. VALVE E-1 FROM BETWEEN PIPES 1 & 5 TO BETWEEN PIPES 4 & 5 TO GIVE ADDITIONAL CLEARANCE BETWEEN VALVE MOTOR OPERATOR AND SHIPS STRUCTURE FOR HULL 4640 ONLY. 2. THIS REVISION RELEASES Y.I.S. 4639-22-99.	W.H.T.	1-15-73
8	4-4-73		1. REVISED PIPES 82 & 82-1 AT 142# REDUCING STATION TO SUIT ADDED STOP VALVE SHOWN ON ALT. 9 OF REF. 2 (HULL 4640 ONLY) 2. RELOCATED VALVE E-8 & REVISED PIPES 48 & 48-1 FOR BETTER ACCESS PER SCN 254 (M-177) (HULL 4640 ONLY)	G.R.E.	

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	10-27-71		1. REVISED PIPE NO. 10 TO CLEAR STRUCTURE. 2. ROTATED POSITION OF MOTOR OPERATOR ON VALVE E-1A 90° OUTBD. TO COMPLY WITH VALVE MANUFACTURERS RECOMMENDATION FOR PROPER OPERATION OF VALVE. 3. REV. QTY OF FLG. ITEM NO. 2 FROM 14 TO 18.	RCH	7.29.71
2	11-29-71	ALL	1. INCREASE QUANTITIES: IT. 7 WAS 125 FT. IT. 8 WAS 22, IT. 34 WAS 13, IT. E21 WAS 6, IT. E53 WAS 4 & ADDED PIPE NO 87. 2. ADDED ESCAPE PIPING-GLAND SEAL MAIN TO HEADER (S.V. #23). 3. INDICATED PRESS. CENSOR CONTROL CONN. P-44-MN. COND. & P-147-AUX. COND. - PER DEVELOPMENT. 4. INDICATED PIPE SUPPORTS - AUX. EXH. PIPING TO MN. COND. PER DEVELOPMENT. 5. ADDED PC. NO E-69 & REVISED SIZE OF E-44 WAS 8"x1/2".	G.G.K.	12-2-71
3	3/29/72	B/M	1. REVISE SIZE E-33 WAS 12"x8" 2. ADDED FLG. ITEM 18 3. INCR. QTY. FLG. ITEM NO. 5 FROM 23 TO 24 4. ADDED FLG. ITEM NO. 17 ITEMS 3 & 4 AS PER YIS NO 4639-22-38	JFC.	4-5-72
4	4-19-72		1. REV. LOCATION OF NOZZLE ON PIPE 23 TO TO AGREE WITH REF. NO. 2	RCH	4/24/72
5	10/4/72	ALL	1. REVISED PIPES NO. 1 & NO. 5 TO CLEAR SHIP'S. STRUCTURE FOR HULL 4640 ONLY. (THIS RELEASE'S HOLD-UP FOR FABRICATION AND INSTALLATION PER YIS. 4639-22-90) 2. ADDED PIPE NO. 3-1 (40") IN LIST OF PIPE SERVICES NOT PREVIOUSLY LISTED. 3. REVISED THE FOLLOWING PIPE'S, TO CLEAR SEWAGE TANK, VENT DUCT, MAIN FEED SPUR GEAR OPERATORS (BELOW 28'-6" FLAT.) PIPE NO'S. 22, 23, 24, 25, 26, 37, 38, 39 & 51. INCR. AMT. FITT. NO E-25 FROM (1 TO 2 REQD.) ADDED FITT. NO E-58 TO FITT. LIST PER SCN # 39. 4. REVISED THE FOLLOWING PIPING TO CLEAR L.O. GRAVITY TANK. PIPE'S. NO'S. 78-5, 85-2, 89, & 90. DELETED PIPE NO. 86 AND DECR. AMT. FITT. NO E-33 FROM 2 TO 1 REQ'D. PER SCN # 44. 5. REVISED THE FOLLOWING PIPE'S. 61(P) 62 (S) 63(P) 64(S) (ESCAPE PIPES FROM SAFETY VALVES) ROTATED FORWARD SAFETY VALVES 90° INBOARD TO PERMIT MORE CLEARANCE WITH MAIN FEED PIPING ON STEAM DRUM. 6. RELOCATED MOTORIZED AUX. EXH. UNLOADING VALVE TO AUX. COND., FROM #6 & 7, TO BETWEEN PIPE NO. 7 & 8, FOR BETTER ACCESSIBILITY., PER SCN # 46. 7. RELOCATED MOTORIZED AUX. EXH. UNLOADING VALVE TO MAIN COND. FROM PIPE 9 & 10 TO BETWEEN PIPE NO. 10-1 & 10-2, FOR BETTER ACCESSIBILITY., REVISED PIPE NO 9, ADDED PIPE NO 10-2 TO LIST OF PIPES PER. SCN. # 47 8. ADDED PIPE SLEEVES TO FITTING LIST PER YIS NO. 4639-22-51	F.J.D.	10-10-72
6			1. REVISED RUN OF PIPE 76 AT DEAERATING HTR. TO SUIT SETTING OF HOLES IN FLANGE ON HTR-PER SCN-109 (M-70). 2. REVISED RUN OF PIPE 42-1 & 42-2 TO FACILITATE REMOVAL OF MN. RED. GEAR COVER. PER SCN-105 (M-67) FOR HULL 4639 ONLY AS INDICATED IN DETAIL "7-A". REVISED RUN OF PIPE 42-1 TO SHOW ADDITIONAL CLEARANCE (CONT'D)	WAN / W.H.T.	

HULL	DESIGN	CHARGE
4640		10-4639
4639	OCEANIC STEAMSHIP CO.	10-4639

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8"=1'-0" DATE 9-30-71
DRAWN RCH APPROVED
TRACED APPROVED
CHECKED J.E.W. APPROVED HBR

PLAN NO. M-4639-371-04-01 ALT. NO. 8

ARRGT OF AUXILIARY EXHAUST, BLEEDER STEAM & ESCAPE PIPING

PLANS & MATERIAL LIST

APPROVAL LETTERS					
HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-29-71				
A.B.S.	X				
U.S.C.G.	9-11-71				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

PIPE SHT. 39-371-04-1-648
SUPPLY SHT. 39-84-1323

UAO-39139

REFERENCE PLANS

NO.	PLAN NO.	TITLE
10	M-4639-371-04-2	ARRGT. OF AUX. EXHAUST BLEEDER STEAM & ESCAPE PIPING
9	M-4639-412-1	DET. OF INST. PIPING FOR CENTRAL CONTROL SYS.
8	M-4639-371-3	SCHEDULE OF SAFETY & RELIEF VALVES
7	M-4639-361-2	SMOKESTACK
6	M-4639-371-1	ARRGT. OF GLAND SEALING & EXHAUST SYS.
5	M-4639-372-03-1	STEAM & FRESH WATER DRAIN COLLECTING SYS.
4	M-4639-401-20	DISTILLING PLANT
3	M-4639-362-1	FORCED DRAFT SYSTEM
2	M-4639-371-09-9	AUXILIARY STEAM PIPING
1	M-4639-371-09-1	MAIN STEAM PIPING, ARRGT. & MAT'L LIST

DATE OF ISSUE

	4639-40	4639-40	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4640 REPL.	4640 REPL.
ALTERATION	0	0	1	2	3	4	5	6	7	8
ENGINEERING DISTRIBUTION	7-2-71	9-2-71	10-4-71	12-13-71	4-6-72	4-24-72	10-11-72	12-18-72	1-16-73	4-5-73
OWNERS	1		1	5	2	2	2	3	3	6
U.S.C.G.	3		3							
OWNER'S INSP.		1	1	1	1	1	1	1	1	1
U.S.M.A. INSP.		1	1	1	1	1	1	1	1	1
HULL DRAFT. - 21	1	1	1	1	1	1	1	1	1	1
MACH. DRAFT. - 22	1	1	1	1	1	1	1	1	1	1
ELEC. DRAFT. - 23	1	1	1	1	1	1	1	1	1	1
OUTFIT. DRAFT. - 25	1	1	1	1	1	1	1	1	1	1
NELSON-PLANNING	2									
TOTAL ENG'R. DIST.	15	5	14	10	7	7	7	8	8	11
PIECE RATE - 11	1	1	1	1	1	1	1	1	1	1
A. J. ...	3	3	3	3	3	3	3	3	3	3
35 DEPT.	4	4	4	2	2	2	2	2	2	2
OPTICAL DETAIL - 45	2	2	2	2	2	2	2	2	2	2
PIPE SHOP - 52	[illegible]									
PIPE DRAFT. - 52	2	2	2	2	2	2	2	2	2	2
Q-MAT'L	2	2	2	1	1	1	1	1	1	1
SHEET MET. SHOP - 74	3	3	3	3	2	2	2	2	2	2
PAINT SHOP - 75	1	1	1	1	1	1	1	1	1	1
MOLD LOFT - 41	1	1	1	1	1	1	1	1	1	1
ORDER DEPT.	1	1	1	1	1	1	1	1	1	1
TOTAL YARD DIST.	[illegible]									

Other rows listed: AMERICAN BUREAU, LLOYD'S R.S., U.S.M.A., U.S. NAVY, JOINER CONT'R., AM. BU. INSP., LLOYD'S INSP., U.S. NAVY INSP., U.S.C.G. INSP., ESTIMATING, PRODUCTION (SCD), ORDER DEPT., JOINER CONT. YARD, YARD DISTRIBUTION, PLAN'G, TEST DEPARTMENT, TRIAL & DELIV., STEEL PLANNING, GROUND ASSEMBLY, NO. WAY, STRUCT. SUPER., WET DOCK, OUTFIT. #1 PIER, BOILER SHOP - 58, OUTSIDE MACH. - 60, ELECTRIC SHOP - 70, COPPER SHOP - 51, WELDING, BRACKET SHOP.

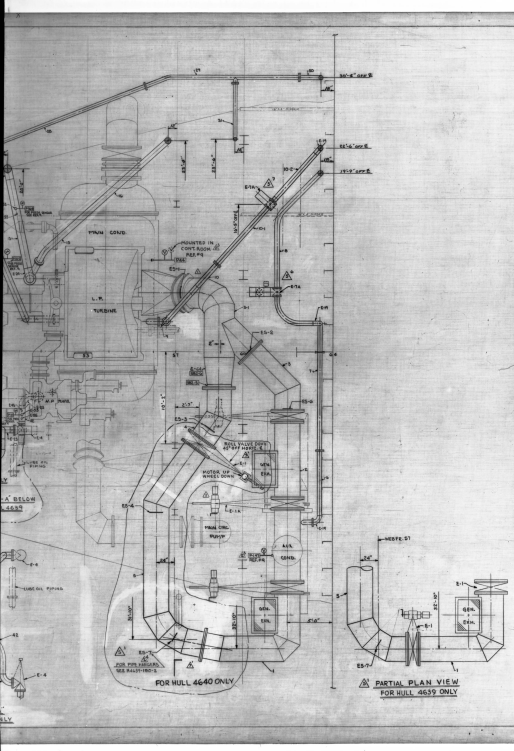
4639-40 - ALT. 4
4639-40 - ALT. 5
4639-40 - ALT. 6
4640 - ONLY - ALT. 7
4640 - ALT. 8

M-425 ____ SQ.FT.

M-4639-371-04-1
SYS. 65 ALT. 8
M-425

F 1

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



LIST OF PIPE SERVICES

ALT. NO.	NO.	PIPE SIZE	SERVICE	REMARKS
Δ1	1-3	3/4"	AUX. COND. TO TURBO-GEN. 4 MFG. COND.	
Δ1	3-15	4"	AUX. CON. UNLOADING VALVE TO AUX. COND.	
Δ1-Δ4	4	6"	MAIN COND.	
1-5	5		L.P. TURBINE TO L.P. STAGE HTR.	
13-14	10"x10"		I.P.	
15-14	5"		I.P. TO DISTILLER STOP CHECK VALVE	
17	3"x2"		FRESH SCV TO MISC. DISTILLERS	
18	1/4"		GAUGE	
19	4"		INLET EXTENSION ON MISC. NOZZLE	
21	1/2"		INLET TO DEAERATOR	
Δ1-Δ4	15"		DEAERATOR TO FEED PUMP HEADER	
27-30	5"		HEADED TO AUX. SCH. UNLOADING VALVE	
31	3/4"		FW TO DISTRD. DISTILLERS	
32	2"x1"		FW TO FWDS. DISTILLERS	
34	4"		CONNECTS 19 TO 21	
Δ1	35-36-45	6"	MAIN FEED PUMPS TO HEADER	
Δ1	39-40	4"	F.E. STATION TO HEADER	
REMARK	5/8"		SPACED BRACES 1 AFTER F.D. VALVE	
REMARK	1"		BY-PASS LINE BETWEEN VALVES	
45-47	3/4"		AIR BLEEDER STM. TO MIS. HEATERS	
REMARK	4"		TO STRD. HEATERS	4-6" NOZZLES
50	4"		TO PORT HEATERS	4-6" NOZZLES
Δ1	52-54	4"	F.F. HEADER TO STBD. STATION	
	52	3"	44 TO STB. STATION	
	53	4"	SPACER, AT UNLOADING	
	54	6"	SPACER	
	55	4"	BUT-PASS	
	56	3"x2"	S.V. ESCAPE, MAIN STM. OUTLET-PORT	
	57	3"x2"	-STBD.	
	58	2"	-CONT. TO TEST	
	59	2"	-CONT. TO STBD.	
	60	4"	S.V. ESCAPE OUTLET TO ATMOSPHERE	
Δ1	61	2"x2"	2"x2" S.V. ESCAPES TO HEADER - PORT	
Δ1	62	2"x2"	-STBD.	
Δ1	63	3"x2"	1030" -PORT	
Δ1	64	2"x2"	-STBD.	
	65	2"x2"	1090" -PORT	
	66	2"x2"	-STBD.	
	67	2"	PILOT ACTUATING LINE - PORT	
	68	2"	-STBD.	
	69	2"	RECIRCULATING LINE - PORT	
	70	1"	-STBD.	
	71	24"	TURBO-GENERATOR EXHAUST	
	72	24"	"	
	73	3/4"	HOSE CONN. FOR WASHMILL L.O.	
	76	6"	AUX. EXHAUST ESCAPE LINE	
	78	20"	HEADED TO ATMOSPHERE	
	79	4"	S.V. ESCAPE LINE	
	79-116	3"	S.V. "	
Δ1	116	4"	S.V. "	
	79	3"	S.V. "	
	80	3"	S.V. "	
Δ1	81	4"	S.V. ESCAPE LINE TO HEADER	
	116-82	8"	S.V. ESCAPE LINE TO HEADER	
	83	10"	S.V. "	
	84	10"	S.V. ESCAPE HEADER - STBD.	
Δ1	84-85	10"	ESCAPE LINE TO HEADER - STBD.	
Δ1	86			
Δ1	87	4"	GLAND SEALING - S.V. TO ESCAPE LINE, TO MIS.	
	88			
	89	14"	AUX. EXHAUST OUTLET TO ATMOSPHERE	
	90	4"	"	
	91	1"	CONTROL VALVE PILOT	
Δ1-4	4678		MAIN COND. TURBO-GEN. 4 (MFG. COND.)	

LIST OF FLANGES AND GASKETS

ALT. NO.	ITEM NO.	AMT.	SIZE	TYPE	PRESS.	MATERIAL	SERVICE	REMARKS
	1	1	40"	SLIP-ON, R.F.	125	FORGED STL.	3/4	
Δ	5	118	24"				17,3, 5,1,4,2, 31, 92	
	3	9	12"	SLIP-ON, R.F.	150		21, 22, 23, 24, 25, 54	TURB. ST.
	4	20	10"				69, 66, 65 - 65-1, 64, 13, 8, 9, 10, 11, 63, 68, 59	
Δ	6	28	8"				48, 46-1, 45, 44, 43, 7, 12, 15, 14, 17, 77, 82, 83-1, 84	
	9	46	6"				6, 7, 8, 9, 10, 11, 12, 13, 20, 40, 42, 41, 61, 62-1, 62, 81, 82, 83, 88, 89, 91, 92-1, 38	
	1	29	5"				19, 18, 16, 15, 17-1, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34	
Δ	8	25	4"				78, 76, 75, 74, 73, 72, 71, 70, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62-2, 63-1, 63-2, 63-3	
	9	13	3"				77, 76, 75, 74, 73, 72, 71, 70, 64, 65, 66, 67, 68, 69	
	10	1	2½"	SOCKET WELD			17, 19, 40, 42-A	BOTH ENDS ON NO. 40
	11	15	2"				49, 50, 51, 42, 41-A	
	12	5	1"				49, 50	
	13	6	¾"				43-A	
	14	2	8"	SPECIAL			91-101, STD. 8" WALL BORED FOR 6" SCH. 40 PIPE	
	15	1	14"				14, STD. WTR.B. - BORED FOR 10 STD. PIPE	
	16	1	24"				SEE DETAIL 4 - 24" x 20" x 1" THK.	24" x 20" x 1" THK.
Δ	17	1	10"	SLIP-ON		Ramsey 87-L	15	
Δ	18	1	6"		300		INLET - S.V. 30	
	19	3	40"	ring - ½" thk.	125	2 MARSHALL 420		
	20	1	24"					
	21	1	14"	SPECIAL	150		14, PIPE ITEM 15 ABOVE	
	22	15	12"	Ring				
	23	15	10"					
	24	15	8"					
	25	8	6"					
	26	17	5"					
Δ	27	4	4"					
	28	8	3"					
	29	4	2½"					
	30	8	2"					
	31	13	1½"					
	32	23	1"					
	33	17	¾"					
Δ	34	17	4"					
	35	8	3"					
	36	4	2½"					
	37	8	2"					
	38	8	1½"					
	39	8	1"					
	40	2	8"	SPECIAL				
	41	5	5"	SPECIAL		ASBESTOS CUTS	SEE DETAIL 3 (ON SHEET NO.) 3 3/8" THK. STRIP 4 5/8" STRIPS 1/8	

LIST OF VALVES AND FITTINGS - CONT.

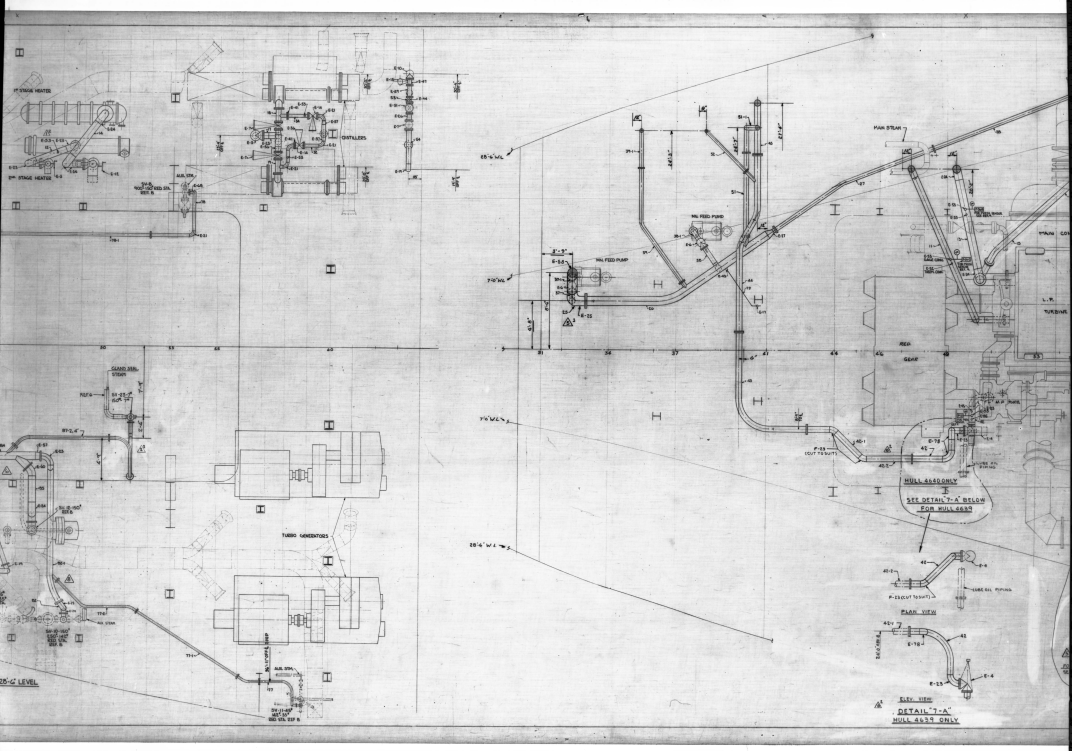
ALT.	PIECE NO.	AMT.	SIZE	PATT. NO.	MATERIAL	DESCRIPTION	CATALOG, PAGE, ETC.	SERVICE	SCH.
Δ	E-70	3	12"	150	STEEL	PIPE SLEEVES	BS-BF-496 PTG.1	AUX. EXH.	
	E-71	22	10"						
	E-72	23	8"						
	E-73	18	6"						
	E-74	19	5"						
	E-75	22	4"						
	E-76	19	3"						
	E-77	1	14"						

LIST OF PIPE QUANTITIES

ALT.	ITEM NO.	AMT.	SIZE	SCH.	MATERIAL	SERVICE	ENGL. SPEC. NO.	MISC. SPEC. NO.
	1	40'-0"	½"	XXS	14 STEEL			
	2	15'-0"	¾"	XXS				
	3	15'-0"	1"	XXS				
	4	15'-0"	1"					
	5	20'-0"	1½"		SMLS. STL.	A.S.A. STRESS DIVIS.		
	6	30'-0"	2"		14 STEEL	A.S.A. STRESS DIVIS.		
Δ	7	145'-0"	4"					
	8	200'-0"	5"			A.S.A. STRESS DIVIS.		
	9	295'-0"	6"					
	10	120'-0"	8"					
	11	95'-0"	10"					
	12	90'-0"	12"					
	13	80'-0"	14"					
	14	7'-0"	16"					
	15	10'-0"	24"					
	17	5'-0"	40"					

4 NECESSARY STEEL FOR THESE ARE

F 2
M-4639-4640
BETHLEHEM STEEL CORP. JULY 1974
8X



F 3

M.4634.371-01-1
Sys.65 ALT.8

M.425

BETHLEHEM STEEL CORP. JULY 1974
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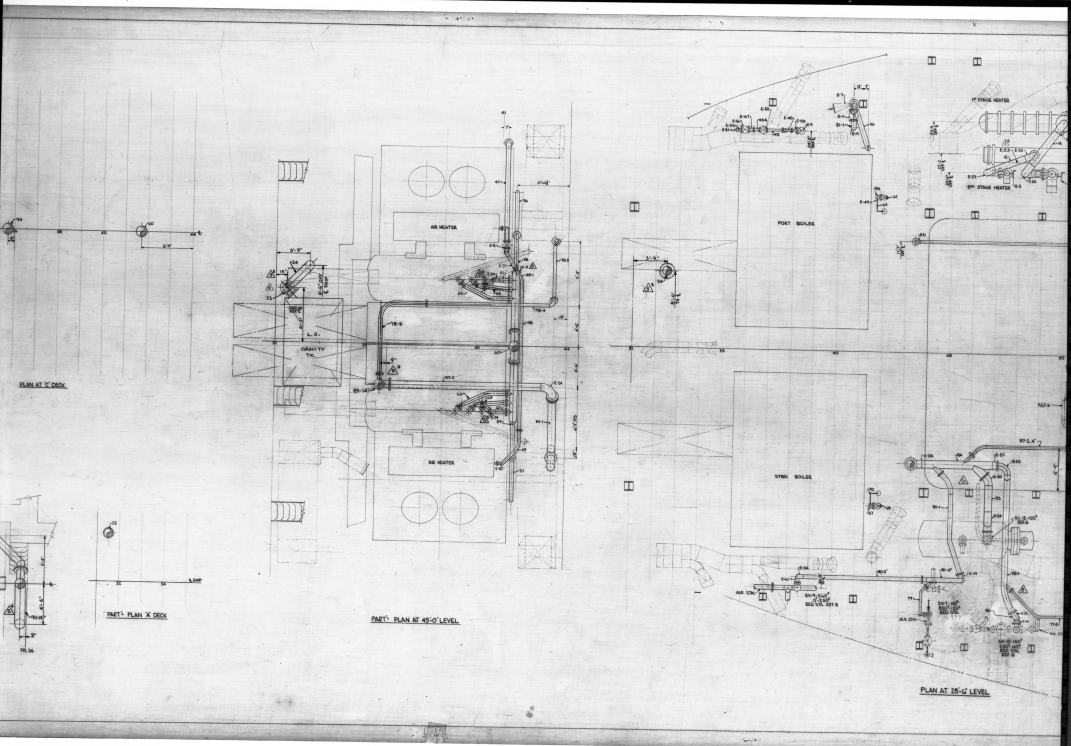

F 4

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Sys.65 ALT.P

M-425

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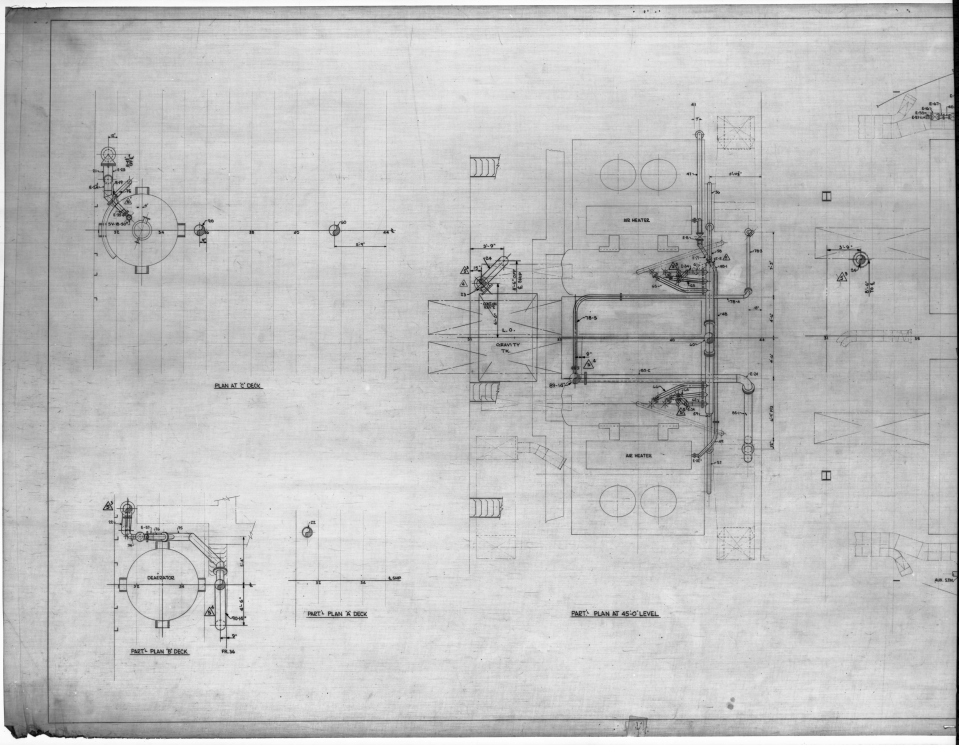

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M-4634-371-01-1
SY-65 ALT. 8
M-425

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
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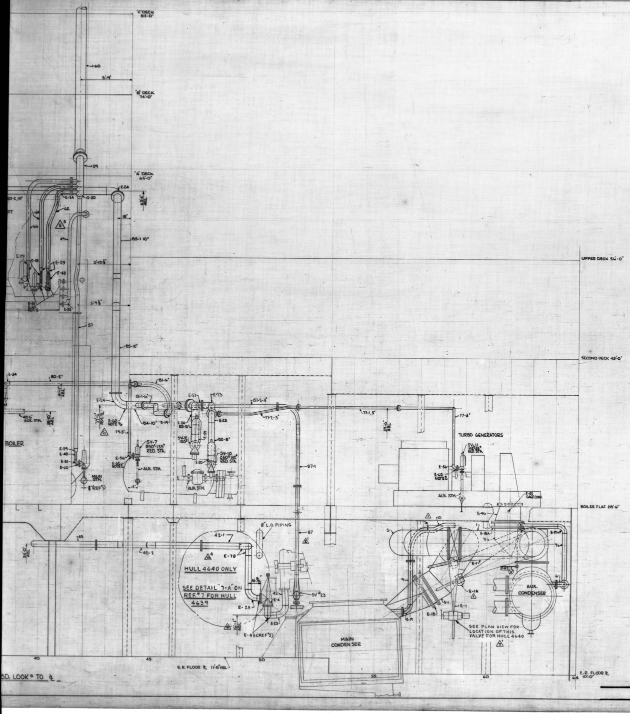


ALTERATIONS(CONT'D)

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
6 CONT	12/12/72		4. IN ELEVATION STBD LKG TO ℄, FRS. 46 TO 50 - REVISED RUN OF PIPE 42-1 TO SUIT REV △2 ON REF. #7. 5. IN SECTION AT FR-53 LKG AFT-SHORTENED DRIP-LEG OF PIPE 13 BY 4" TO CLEAR 6" GLAND SEALING PIPE. PER SCN #136 (M-94)	W.H.T	
7	1/5/73	2-A	1. ADDED NOTE PERTAINING TO RE-LOCATION OF VALVE E-1 FOR HULL 4640 ONLY.	W.H.T	1-15-73 WCY

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	10-27-70		1. REV. PIPE NO. 10 TO CLEAR STRUCTURE. 2. ROTATED POSITION OF MOTOR OPERATOR ON VALVE E-1A 90° OUTBD. TO COMPLY WITH VALVE MANUFACTURERS RECOMMENDATION FOR PROPER OPERATION OF VALVE. 3. IN SECT. FR44 LKG. AFT. REVISED RUN OF PIPES 65 & 66 TO FACILITATE INSTALLATION OF EXPANSION JOINTS (FITTG. NO. E-48) 4. CORRECTED RUN OF PIPE NO. 7 TO AGREE WITH PLANS.	RCH	9.22.71
2	11-29-71		1. ADDED ESCAPE PIPING - GLAND SEAL MAIN TO HEADER (SV #23). 2. ADDED GAGE CONN. TO IT. No 12 3. INDICATED PRESS. CENSOR CONTROL CONN. R44 & P-147. - PER DEVEL. 4. ADDED PC. No E-69 TO STM. EXH. LINE OF MN. FEED PMPS.	GGK	WWR 12/6/71
3	3/28/72		1. CORRECTED RELIEF VALVES & PIPING ARRGT @ BOILERS P&S. PIPE Nos 63,65 PORT - 64,66 STBD. TO AGREE WITH PLAN VIEW.	JFC	WWR
4	4-19-72		1. REV. LOCATION OF NOZZLE ON PIPE 23 TO AGREE WITH REF. NO. 2	RCH	WWR
△5	10/11/72		1. REVISED PIPES No. 1 & No 5 TO CLEAR SHIP'S STRUCTURE FOR HULL 4640 ONLY. (THIS RELEASE'S HOLD-UP FOR FABRICATION AND INSTALLATION PER YIS. 4639-22-90) 2. ADDED PIPE No 3-1 (40") IN LIST OF PIPE SERVICES NOT PREVIOUSLY LISTED. 3. REVISED THE FOLLOWING PIPE'S TO CLEAR SEWAGE TANK, VENT DUCT, MAIN FEED SPUR GEAR OPERATORS (BELOW 28'-6" FLAT) PIPE Nos. 22, 23, 24, 25, 26, 37, 38, 39 & 51. PER SCN #39. 4. REVISED THE FOLLOWING PIPING TO CLEAR L.O. GRAVITY TANK, PIPE Nos. 78-5, 85-2, 89 & 90. DELETED PIPE No. 86 AND FITT. No E-33 FROM LIST. PER SCN #44. 5. REVISED THE FOLLOWING PIPING 61(P) 62(S) 63(P) & 64(S) (ESCAPE PIPES FROM SAFETY VALVES) ROTATED FORWARD SAFETY VALVES 90° INBOARD TO PERMIT MORE CLEARANCE WITH MAIN FEED PIPING ON STEAM DRUM. 6. RELOCATED MOTORIZED AUX. EXH. UNLOADING VALVE TO AUX. COND. FROM PIPE #6 & 7 TO BETWEEN PIPE No. 7 & 8, FOR BETTER ACCESSIBILITY. PER SCN #46 7. RELOCATED MOTORIZED AUX. EXH. UNLOADING VALVE TO MAIN COND. FROM PIPE 9 & 10 TO BETWEEN PIPE No. 10-1 & 10-2 FOR BETTER ACCESSIBILITY. REVISED PIPE No 9, ADDED PIPE No 10-2 TO LIST OF PIPES. PER SCN # 47. 8. ADDED PIPE SLEEVES TO FITTING LIST PER YIS. No 4639-22-51.	F. J. D.	10-10-72
△6	11-13-72		1. REVISED DIMENSION OF PIPE 42 ABOVE ℄ FROM 16'-4" TO 16'-1" ON STBD. ELEV. LKG. TO ℄ AND SECT. AT FR. 53 LKG. AFT. 2. INDICATED DEGREE OF ROLL OF VALVE E-1 STBD. SIDE IN SECT. AT FR. 64 LKG. AFT; SCN 75 (M-44) 3. REVISED PIPE 76 DUE TO DEAERATOR NOZZLE BEING SET ONE HOLE UP IN ELEV. ABOVE "C" DECK; SCN 109 (M-70)	WAN	
	11-4-72		4. REVISED RUN OF PIPES 84, 83, 82-1, 87-1, 81-1 & 85 TO PROVIDE CLEARENCE WITH MAIN STEAM INSULATION AND TO SUIT S.C.N. NO. 129/DRWG. NO. M-89		

CONT'D IN NEXT COLUMN

HULL	DESIGN	CHARGE
4640		10-4639
4639	OCEANIC STEAMSHIP CO.	10-4639

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE 6-30-71
DRAWN RCH APPROVED
TRACED APPROVED
CHECKED JEH APPROVED WWR

PLAN NO. M-4639-371-04-02 ALT. NO. 7

ARRGT. OF AUXILIARY EXHAUST, BLEEDER STEAM & ESCAPE PIPING
ELEVATIONS & SECTIONS

APPROVAL LETTERS					
HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	7-29-71				
A.B.S.	X				
U.S.C.G.	8-11-71				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

NO.	PLAN NO.	TITLE
7	M-4639-371-04-01	ARRGT AUX. EXH. BLDR STM & ESCAPE-PLANS.
6	M-4639-371-01-1	COMPRESSED AIR SYSTEM
5	M-4639-372-03-1	STEAM & FRESH WATER DRAIN COLLECTING SYS.
4	M-4639-401-20	DISTILLING PLANT
3	M-4639-362-1	FORCED DRAFT SYSTEM
2	M-4639-371-09-9	AUXILIARY STEAM PIPING
1	M-4639-371-09-1	MAIN STEAM PIPING, ARRGT. & MAT'L LIST

REFERENCE PLANS

	DATE OF ISSUE								
ALTERATION	0	0	1	2	3	4	5	6	7
ENGINEERING DISTRIBUTION	7-2-71	8-26-71	10-1-71	11-15-71	4-6-72	4-24-72	10-11-72	12-18-72	1-16-73
OWNERS	1		5	5	2	2	2	3	3
AMERICAN BUREAU									
LLOYD'S R.S.									
U.S.M.A.									
U.S. NAVY									
U.S.C.G.	3		3						
JOINER CONT'R.									
OWNER'S INSP.		1	1	1	1	1	1	1	1
AM. BU. INSP.									
LLOYD'S INSP.									
U.S.M.A. INSP.		1	1	1	1	1	1	1	1
U.S. NAVY INSP.									
U.S.C.G. INSP.									
HULL DRAFT. - 21	1	1	1	1	1	1	1	1	1
MACH. DRAFT. - 22	1	1	1	1	1	1	1	1	1
ELEC. DRAFT. - 23	1	1	1	1	1	1	1	1	1
OUTFIT. DRAFT. - 25									
ESTIMATING									
ROBERTS - SHIP SUPT	1								
PRODUCTION (BCD)									
ORDER DEPT.									
JOINER CONT. YARD									
NELSON - PLANNING	2								
TOTAL ENG'R. DIST.	15	5	14	10	7	7	7	8	8
YARD DISTRIBUTION	7-8-71	9-1-71	10-21-71	4-10-72	4-27-72	10-12-72	12-26-72	1-18-73	
PLAN'G	1	1	1	1	1	1	1	1	
A.J. BAILEY	3	3	3	3	3	3	3	3	
PIECE RATE - 11	1	1	1	1	1	1	1	1	
TEST DEPARTMENT									
TRIAL TSEW.	1	1	1	1	1	1	1	1	
STRUC. PLANNING									
GROUND ASSEMBLY	4	4	4	2	2	2	2	2	
NO. WAY									
NO. WAY									
NO. WAY									
NO. WAY									
STRUCT. SUPER.									
OPTICAL DETAIL - 45	2	2	2	2	2	2	2	2	
WET DOCK									
PIPE SHOP - 52	8	8	8	6	6	6	6	6	
OUTFIT. #1 PIER									
PIPE DRAFT. - 52	2	2	2	2	2	2	2	2	
BOILER SHOP - 58									
OUTSIDE MACH. - 60	2	2	2	2	1	1	1	1	
Q-MAT'L	2	2	2	2	1	1	1	1	
ELECTRIC SHOP - 70									
SHEET MET. SHOP - 74	3	3	2	2	2	2	2	2	
COPPER SHOP - 51									
PAINT SHOP - 75	1	1	1	1	1	1	1	1	
WELDING	1	1	1	1	1	1	1	1	
MOLD LOFT - 41	1	1	1	1	1	1	1	1	
BRACKET SHOP									
ORDER DEPT.	1	1	1	1	1	1	1	1	
TOTAL YARD DIST.	35	35	30	26	24	26	26	26	

4639-70; 4639-40; 4639-70 REPL.; 4639-40 REPL.; 4639-40 REPL.; 4639-40 REPL.; 4639-40 REPL.; 4639-40 REPL.; 4640 REPL.

4639,40-ALT 3; 4639,40-ALT 4; 4639,40-ALT 5; 4639,40-ALT 6; 4639,40-ALT 7

M-426

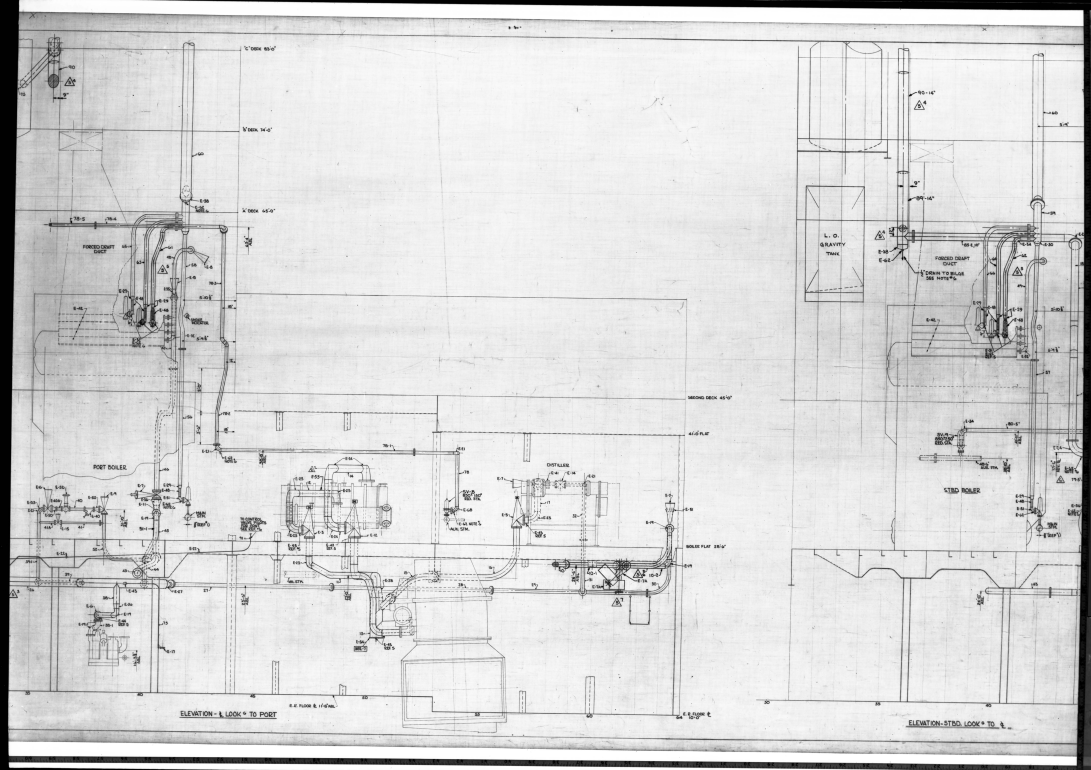
____ SQ.FT.

F 1

M-4639-371-04-2 Sys. 35 ALT. 7

M-426

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



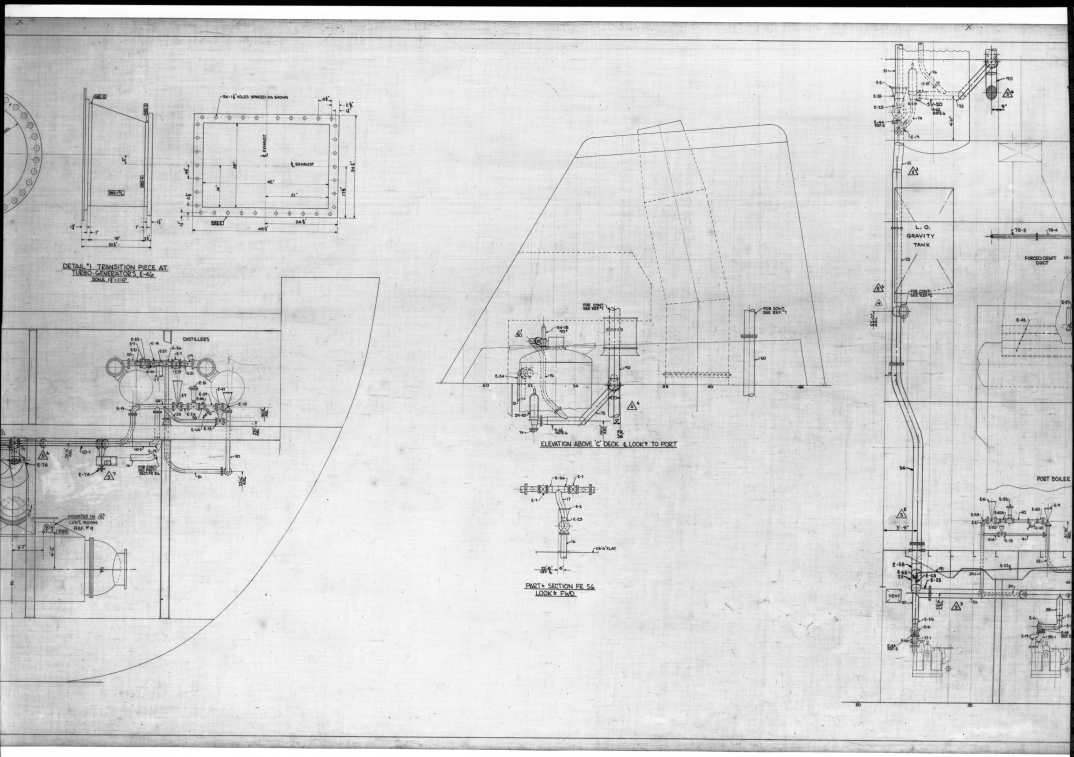
ELEVATION - ℄ LOOK ° TO PORT

ELEVATION - STBD. LOOK ° TO ℄

F 2

M-4639-371-04-2
Sys. 35 ALT. 7
M-426

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 3

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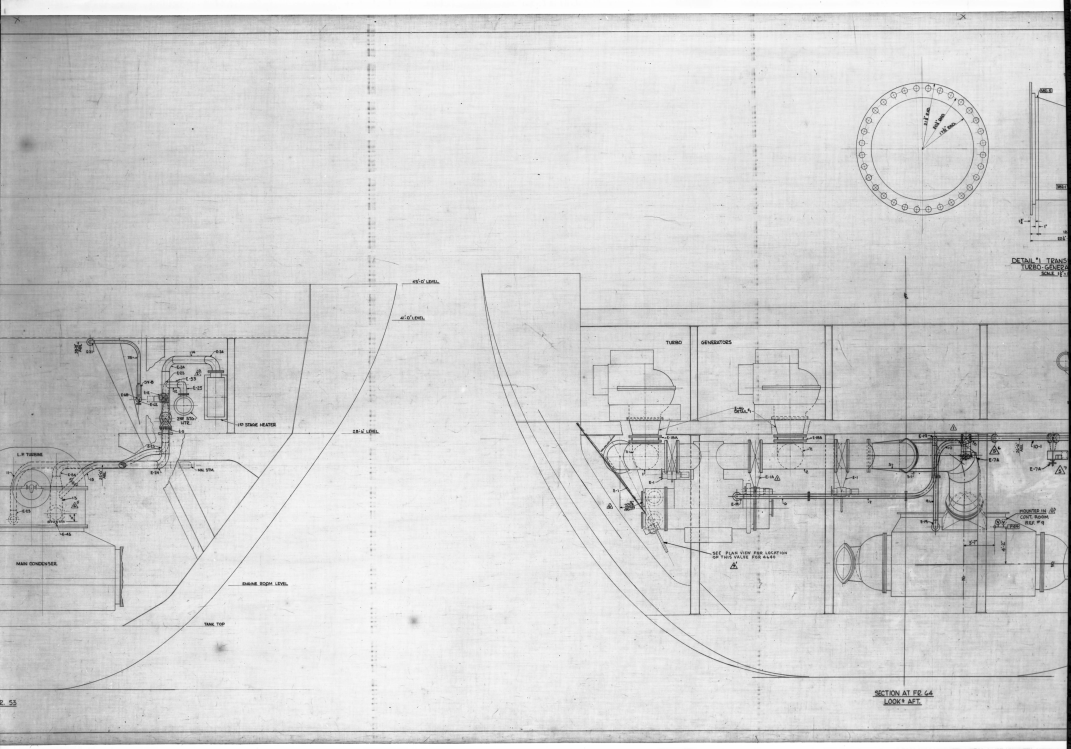
Sys. 25 Alt. 7
M-426

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

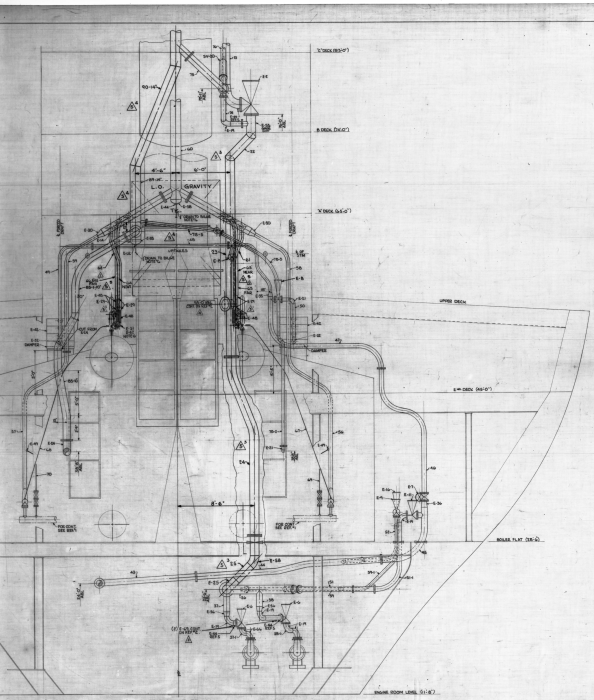


F 4

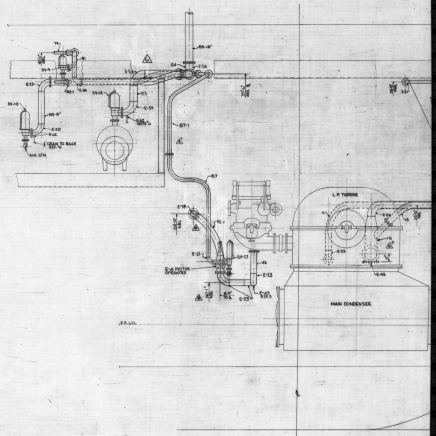
M.426

M.4639-371-04-2
Sys. 25
Alt. 7

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



SECTION AT FR 44
LOOK® AFT



SECTION AT FR 53
LOOK® AFT

F 5

M.4639-371-04-2
Sys. 25 ALT. 7
M-426

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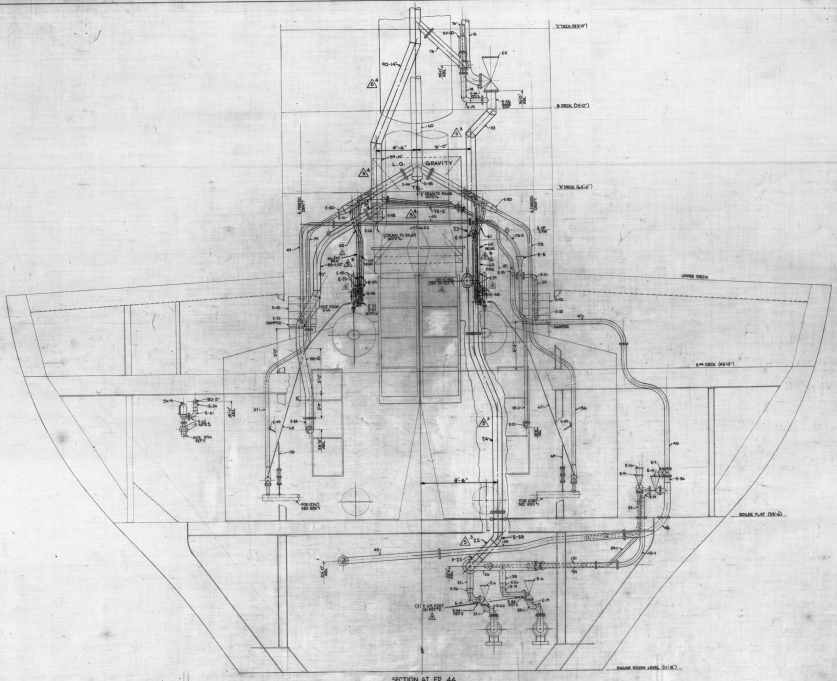
H 4639-4640
8X



SECTION AT FR 44
LOOK® AFT

F 6
111-4634-371-04-2
Sys. 25 Alt. 7
111-434
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

...No.	REMARKS	ANSI	REQ. No.	REQ. No.
35		B16.5	39383-F	(4)39213
35				
5				
5				
5				(5)39213
558				
558				
558			(3)39383-G (31)39383-B	(3)39213
558			39383-F	
75			39383-B	
35			39383-F	
34				
3			39383-B	
35				
75			39383-F	
558			39383-F	
558			39383-F	

PIPE LIST

ALT. No.	PIPE No.	SIZE	SCH.	MATERIAL	A.S.T.M.	LENGTH	SERVICE	ANSI	CLASS	OPER. TEMP.	WORK. PRESS.	INSTAL. TEST	REQ. No.
	1 TO 2	5"	80	SEAM. STEEL	A-106 GR. B	40'-0"	SATURATED STEAM - STB'D. BOILER	B36.10	I	538°F	930#	1523#	39104-F
	3 TO 4	5"	80	SEAM. STEEL	A-106 GR. B	40'-0"	SATURATED STEAM - PORT BOILER		I	538°F	930#	1528#	
	5 TO 6-1	8"	120	CR MO STEEL	A-335 GR. P-11	40'-0	SUPH'T'D. STEAM - STBD. BOILER		I	960°F	870#	1418#	
	8 TO 10	8"	120	CR MO STEEL	A-335 GR. P-11	60'-0"	SUPH'T'D. STEAM - PORT BOILER		I	960°F	870#	1418#	
△3 △1[6]	11 TO 12-2	10"	120	CR MO STEEL	A-335 GR. P-11	60'-0"	COMBINED SUPH'T'D. STEAM TO H.P. TURBINE		I	960°F	870#	1418#	39104-F 39104-AT
	13 TO 14	6"	120	CR MO STEEL	A-335 GR. P-11	21'-0"	ASTERN STEAM		I	950°F	870#	1418#	39104-M
	15	6"	120	CR MO STEEL	A-335 GR. P-11	—	EMERGENCY STEAM TO L.P. TURBINE (BEFORE DESUP.)		I	960°F	870#	1418#	—
	16	6"	120	CR MO STEEL	A-335 GR. P-11	40'-0"	EMERGENCY STEAM TO L.P. TURBINE (AFTER DESUP.)		I	800°F	853#	1418#	39104-M
△3	17	6"	120	SEAM STEEL	A-106 GR. B	10'-0"	EMERGENCY STEAM TO L.P. TURBINE (AFTER DESUP.)		I	795°F	853#	1418#	39104-R
△2[2] △1[6]	19 TO 21	4"	120	CR MO STEEL	A-335 GR. P11	(2-22'-0") (2-20'-0")	SUPH'T'D. STEAM TO INB'D. TURBO-GEN.		I	960°F	870#	1418#	39104-F
△2[2]	22	3"	160	CR MO STEEL	A-335 GR. P-11	5'-0"	SUPH'T'D. STEAM TO INB'D. TURBO-GEN.		I	960°F	870#	1418#	39104-AT
△2[2]	25 TO 28	4"	120	CR MO STEEL	A-335 GR. P11	80'-0"	SUPH'T'D. STEAM TO OUTB'D. TURBO-GEN.		I	960°F	870#	1418#	39104-F
△2[2]	29	4"	120	CR MO STEEL	A-335 GR. P-11	20'-0"	SUPH'T'D. STEAM TO OUTB'D. TURBO-GEN.		I	960°F	870#	1418#	39104-F
	32	4"	120	CR MO STEEL	A-335 GR. P11	15'-0"	SUPH'T'D. STEAM TO WATER DRUM DESUP. - STBD. BOILER		I	960°F	870#	1418#	39104-F
	33	4"	120	CR MO STEEL	A-335 GR. P11	15'-0"	SUPH'T'D. STEAM TO WATER DRUM DESUP. - PORT. BOILER		I	960°F	870#	1418#	
△1[5]	34	4"	120	CR MO STEEL	A-335 GR. P-11	20'-0"	SUPH'T. CONTROL STEAM TO STEAM DRUM DESUP. - STBD. BOILER		I	922°F	1012#	1523#	
	35 TO 36	4"	80	SEAM. STEEL	A-106 GR. B	25'-0"	SUPH'T. CONTROL STEAM FROM STEAM DRUM DESUP. - STBD. BOILER		I	683°F	880#	1523#	39104-Fa
△1[5]	37	4"	120	CR. MO STEEL	A-335 GR. P-11	20'-0"	SUPH'T. CONTROL STEAM TO STEAM DRUM DESUP. - PORT. BOILER		I	922°F	1012#	1523#	39104-F
	38 TO 39	4"	80	SEAM. STEEL	A-106 GR. B	25'-0"	SUPH'T. CONTROL STEAM FROM STEAM DRUM DESUP. - PORT BOILER		I	683°F	880#	1523#	39104-F-1X
	40 TO 41	2"	160	CR MO STEEL	A-335 GR. P-11	2'-0"	SUPH'T'R. SAFETY VALVE CONN.		I	960°F	870#	1418#	39104-F
	42 TO 43	1"	80	CR MO STEEL	A-335 GR. P-11	2'-0"	RECIRCULATING STEAM CONN.		I	960°F	870#	1418#	39104-F
	44 TO 47	¾"	80	CR MO STEEL	A-335 GR. P-11	10'-0"	SUPH'T'D. STEAM TO FLASH CHAMBERS		I	960°F	870#	1418#	39104-F-1X
△2[2] △1[1]	48 TO 59	¾"	80	CR MO STEEL	A-335 GR. P-11	40'-0"	SUPH'T'D. STEAM DRAINS		I	960°F	870#	1418#	
	60	½"	80	CR MO STEEL	A-335 GR. P-11	10'-0"	EMERGENCY STEAM DESUP. DRAIN		I	960°F	870#	1418#	
	61	1½"	80	CR MO STEEL	A-335 P-11	5'-0"	H.P. TURBINE STRAINER BLOWOFF		I	960°F	870#	1418#	39104-M
△3	62	1¼"	80	CR MO STEEL	A-335 P-11	5'-0"	L.P. TURBINE STRAINER BLOWOFF		I	960°F	870#	1418#	39104-BR
△2[2]	63	3"	160	CR MO STEEL	A-335 P-11	5'-0"	SUPH'T'D STEAM TO OUTB'D TURBO-GEN.		I	960°F	870#	1418#	39104-AT

...	REMARKS	REQ. No.	REQ. No.
		(4)39380-F (6)39380-B	
		39380-B	
		39380-B	
...9, 32		(16)39380-H (21)39380-B	(21)39211
		39380-H	
		39380-B	
		39380-B	
		39380-B	
		39380-B	
		39380-B	
		39380-B	
		39380-B	
		39382	
		39382-B	
		—	
TO		—	
TO	COVER FLG. BORED 1¼" SCH.80 BLOWOFF	393811-B	
ROL	ORDER 1'-0" 2½" SCH.160 PIPE		
ROL	ORDER 1'-0" 2½" SCH.160 PIPE		
		39380-B	
		39381-A	
O	FURN. WITH TURB. 1500# A.S.A. INLET & OUTLET	—	
		39381-B	
		39381-A	
TO OR	FURNISHED WITH GENS. 1500# ASA INLET & OUTLET	—	
		39381-A	
		39381-B	
		39211	

VALVE LIST

ALT. No.	VALVE No.	AMT.	SIZE	PRESS	MATERIAL	A.S.T.M.	DESCRIPTION	CAT. OR DRWG. No.	SERVICE	REMARKS	ANSI	REQ. No.
	S-1	1	8"	1500#	CR.MO S.S. TRIM	A-217 WC-6	FLGD., GLOBE STOP CHECK, NON-CHATTERING, IMPACTOGEAR, STOP CHECK BY-PASS R.H.				B16.10/B16.5	39210
							SIDE FACING OUTLET, STELLITED SEAT AND DISC, F&D	EDWARDS, 7506 MOD.	SUPH'T'D. STM. TO SYS.			
	S-2	1	8"	1500#	CR MO S.S. TRIM	A-217 WC-6	FLGD. GLOBE STOP CHECK, NON-CHATTERING, IMPACTOGEAR, STOP CHECK BY-PASS L.H.				B16.10/B16.5	39210
							SIDE FACING OUTLET, STELLITED SEAT AND DISC, F&D	EDWARDS, 7506 MOD.	SUPH'T'D. STM. TO SYS.			
	S-3	1	8"	1500#	CR MO S.S. TRIM	A-217 WC-6	FLGD. GLOBE F&D., IMPACTOGEAR, BY-PASS R.H. SIDE FACING OUTLET	EDWARDS, 7516 MOD.	SUPH'T'D. STM. TO SYS.	STELLITED SEAT & DISC.	B16.10/B16.5	39210
	S-4	1	8"	1500#	CR MO S.S. TRIM	A-217 WC-6	FLGD. GLOBE F&D., IMPACTOGEAR, BY-PASS L.H. SIDE FACING OUTLET	EDWARDS, 7516 MOD.	SUPH'T'D. STM. TO SYS.	STELLITED SEAT & DISC	B16.10/B16.5	39210
	S-5	1	6"	1500#	CR MO S.S. TRIM	A-217 WC-6	FLGD., ANGLE F&D, BY-PASS L.H. SIDE FACING OUTLET	EDWARDS, 7517	EMER. STM. TO L.P. TURB.	STELLITED SEAT & DISC	B16.10/B16.5	39210
	S-6	2	4"	1500#	CR MO S.S. TRIM	A-217 WC-6	FLGD., GLOBE F&D., BY-PASS R.H. SIDE FACING OUTLET	EDWARDS, 7516	SUPH'T'D. STEAM TO TURBO-GENERATOR	STELLITED SEAT & DISC	B16.10/B16.5	39210
	S-7	4	1"	1500#	FORGED CR MO S.S. TRIM	A-182 F-11	FLGD., GLOBE F.&D.	EDWARDS, 1028	RECIRC. STEAM	STELLITED SEAT & DISC	B16.10/B16.5	39210
△2[3] △1[1]	S-8	30	¾"	1500#	FORGED CR. MO S.S. TRIM	A-182 F-11	FLGD., GLOBE F.&D.	EDWARDS, 1028	SUPH'T'D. DRAINS & BOILER FEED CONTROL		B16.10/B16.5	(8)39210-B1X (16)39210 (8)39210-C (1)39210-B
	S-9	4	¾"	1500#	FORGED CR MO S.S. TRIM	A-182 F-11	FLGD., ANGLE F&D.	EDWARDS, 1029	SUPH'T'D. DRAINS		B16.10/B16.5	39210
	S-10	2	4"	1500#	CAST STEEL S.S. TRIM	A-216 WCB	FLGD., DIAPHRAGM CONTROL, F.&D.	LESLIE DOS	SUPH'T'R. CONTROL		—/B16.5	—
	S-11	3	4"	1500#	CR MO S.S. TRIM	A-217 WC-6	FLGD., GLOBE F.&D., BY-PASS L.H. SIDE FACING OUTLET	EDWARDS, 7616	SUPH'T'D. STEAM TO TURBO-GENERATOR		B16.10/B16.5	39210
	S-12	1	6"	1500#	CR MO S.S. TRIM	A-217 WC-6	FLGD., GLOBE F.&D., & MOTOR OPERATED	EDWARDS, 7516 MOD	EMERGENCY STM. TO L.P. TURBINE		B16.10/B16.5	39210
	S-13	2	½"	600#	FORGED STEEL S.S. TRIM	A-105 GR. 2	FLGD., ANGLE, F.&D.	EDWARDS, 829	BOILER DRUM VENT		B16.10/B16.5	3921
	S-14	2	½"	1500#	FORGED CR MO S.S. TRIM	A-182 F-11	FLGD., GLOBE, F.&D.	EDWARDS, 1028	EMER. STEAM DESUPHTR. DRAIN		B16.10/B16.5	39210-B
	S-15	1	6"	900#	CR MO S.S. TRIM	A-217 WC-6	FLGD., ASTERN GUARDIAN VALVE, F.&D.	GIMPEL MACH. WORKS DWG. NP-738 REV. A	ASTERN STEAM	1500# ASA INLET & OUTLET FLGS.	B16.10/B16.5	—
	S-16	2	1¼"	1500#	FORGED CR MO S.S. TRIM	A-182 F-11	FLGD., GLOBE, F.&D.	EDWARDS, 1028	STRAINER BLOWOFF		B16.10/B16.5	39210-B
	S-17	2	1½"	1500#	FORGED STEEL S.S. TRIM	A-105 GR. 2	FLGD., GLOBE, F.&D.	EDWARDS, 1028	STRAINER BLOWOFF		B16.10/B16.5	39210-B

GENERAL NOTES

1. ALL MATERIAL TO BE MANUFACTURER'S STD. AS LISTED OR EQUAL.
2. VALVES & FITTINGS TO MEET REQUIREMENTS OF U.S.C.G AND A.B.S.
3. DIMENSIONS FROM MOLDED LINES UNLESS NOTED OTHERWISE.
4. SUPERHEATER HEADERS VENT CONNECTIONS TO BE BLANKED OFF AFTER HYDROSTATIC TEST IS COMPLETED.
5. ALL PIPES TO BE SUBJECTED TO INSTALLED HYDROSTATIC TEST AT PRESSURES SHOWN IN PIPE LIST & WITNESSED BY REPRESENTATIVES OF REGULATORY BODIES AS REQ'D.
6. PIPING ON THIS DRAWING DETAILED UNDER SYSTEM 26.
7. STUD MATERIAL TO BE A.S.T.M. A-193 GR. B-16, STUDS TO BE CONTINUOUSLY THREADED. STUD LENGTHS GIVEN DO NOT INCLUDE CROWNED ENDS. NUT MATERIAL TO BE A.S.T.M. A-194 GR.3. TWO (2) AMERICAN STD. HEAVY HEX. NUTS TO BE FURNISHED PER STUD. STUDS & NUTS TO HAVE AMERICAN STD. COARSE THREADS.
8. APPROX. LOCATION OF SPRING HANGERS MARKED: • SH
   APPROX. LOCATION OF ROD HANGERS MARKED: ■ RH
   APPROX. LOCATION OF SWAY BRACES MARKED: SB OR SSB
9. ONE END OF STUD TO BE STAMPED WITH MARK "B-16" AND OTHER END WITH VENDORS SYMBOL
10. IDENTIFICATION OF SHIP WELDS MARKED THUS: SW

RESERVATIONS

△1[6] ~~1. PIPE 11 & 12 PENDING STRESS ANALYSIS~~
△2[4] ~~2. LOCATION OF SPRING & ROD HANGERS & SWAY BRACES.~~

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	6/25/71	8,12 13,14	1. ADDED DRAIN CONNS IN PIPES 19 & 26 TO AGREE WITH DIAG. & G.G. SHARP CO. LTR 5/7/71 a. ADDED PIPES 57 & 58. b. REVISED QUANT. OF VALVE S-8, FLG ITEM 8 & STUDS AND GASKETS ITEM 38.	J.K.	
		13,14	2. ADDED PRESS. SWITCH CONNS. ON PIPES 19 & 25.		
		13	3. REVISED HEIGHT AB. & PIPE 27.		
		13,14	4. REVISED LOCATION OF CENTRAL CONT. THERM. ON PIPES 5 & 8.		
			5. REVISED PIPES 34 & 37 TO CLEAR SOOT BLOWERS.		
		8,12 13,14	6. TO REDUCE PIPE STRESS a. REVISED PIPES 12, 18, 19, 25, 32 & 33. b. ADDED PIPE 12-1 c. ADDED SHIP WELD SW #26 d. DELETED RESV. #1 e. REVISED QUANT. OF PIPES 11 TO 12-1 & 18 TO 21.		
2	1/8/72	8,9, 14	1. TO REDUCE FORCES & MOMENTS AT H.P. TURB. STM INLET a. REVISED PIPES 12 & 12-1 & CHGD QUANT. b. CHGD QUANT. OF FLG ITEM 1. c. CHGD QUANT OF STUDS & GASK. ITEM 1. d. DELETED SHIP WELD SW #26	J.K.	
		7,8 11,12 13,14	2. TO REDUCE FORCES & MOMENTS AT TURBO-GENS a. DELETED PIPE 18, REVISED PIPES 19, 20 & 21, CHGD QUANT. b. REVISED & CHGD SIZE OF PIPES 22 & 29, ADDED QUANT. c. REVISED PIPES 25, 27 & 28 d. ADDED PIPES 59 & 63 e. CHGD QUANT OF FLG ITEMS 5 & 8. f. CHGD QUANT. S-53, ADDED S-78 g. CHGD QUANT. STUDS & GASK. ITEM 35 h. DELETED SHIP WELDS SW #20 & 22		
		11	3. DELETED VALVED DRAIN CONNS AT ASTERN GUARD. VALVE a. CHGD QUANT. S-8		
			4. INDICATED APPROX. LOCATION OF SUSPENSION SYSTEM UNITS (PLAN VIEWS ONLY) a. DELETED RESV. #2. ITEMS 1 & 2 ABOVE RELEASE YIS No 4639-22-16. REMOVED RES. OF ITEMS S-68 & S-69		
3	7/20/72	8,13 14	1. REVISED PIPE NOS 6 & 9 AND ADDED PIPE No 6-1 & 9-1. ADDED SHIP WELDS SW #27 & SW #28 TO FACILITATE INSTALLATION OF PIPING ON SHIP. ABOVE REVISION MADE AS PER Y.I.S. No 4639-22-37.	P. M. N.	
		7,8, 11,13	2. REVISED PIPE No 20 AS PER Y.I.S. No 4639-22-41, TO CLEAR BRACKET.		
			3. ADDED ANSI SPECIFICATIONS TO MATERIAL LISTS TO COMPLY WITH U.S.C.G. LTR. No 5940 DATED 14 JULY 1972.		
			4. REVISED PIPE No 12 BY ADDING SW #29 & ADDED PIPE No 12-2. ADDED PIPE No 12-2 TO PIPE LIST. ADDED SW #29 TO SHIP WELDS LIST. ABOVE REVISION MADE TO COMPLY WITH Y.I.S. No 4639-22-84.		FCY 8-23-72
			5. CORRECTED MAT'L. OF PIPE No. P-62 (1¼") TO CR. MO. STEEL AND TEMP. OF PIPE No. 17 TO 795°F.		
4	12/11/72	11	ROTATED BONNETT OF S-15 90°, WITH HANDWHEEL AFT., TO FACILITATE INSTALLATION OF OPERATING GEAR & TO CLEAR LADDER.	R. W. F.	

HULL	DESIGN	CHARGE
4640	34,700 DWT. CONTAINERSHIP	10-8459
4639	34,700 DWT. CONTAINERSHIP	10-8439

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 3/8" = 1'-0" DATE APRIL 7, 1971
DRAWN J. KISELEWICH/PM. NOWAK APPROVED
TRACED APPROVED
CHECKED G. H. APPROVED LBJR

PLAN NO. M-4639-371-09-1 ALT. NO. 4

MAIN STEAM PIPING
ARRGT. & MAT'L. LIST

APPROVAL LETTERS

HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	6-7-71				
A.B.S.	X				
U.S.C.G.	10-2-72				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

REFERENCE PLANS

NO.	PLAN NO.	TITLE
9	M-4639-321-1	ARRGT. OF THROTTLE VALVE OPERATING GEAR
8	M-4639-371-01-1	COMPRESSED & SCAVENGING AIR SYS.
7	M-4639-412-1	DET. OF INST. PIPING FOR CENTRAL CONTROL SYS.
6	M-4639-180-1	SPRING & ROD HANGERS & SWAY BRACES FOR STM. PIPING
5	M-4639-411-2	REMOTE LIQ. LEVEL, BLR. FD. & COMB. CONTROL PIPING
4	M-4639-372-11-1	FEED CONDENSATE & AIR EJECT. PIPING
3	M-4639-372-03-1	STM. & F.W. DRAINS
2	M-4639-371-04-1	AUX. EXH. BL'DR. STM. & ESCAPE PIPING
1	M-4639-371-09-2	MAIN STM. PIPE DETAILS

DATE OF ISSUE

4639-40, 4639-40, 4639-40, 4639-40 REPL., 4639-40 REPL., 4639-40 REPL., 4639-40 REPL.

ALTERATION	0	1	1	2	2	3	4
ENGINEERING DISTRIBUTION	4-12-71	7-9-71	8-5-71	12-20-71	1-12-72	8-31-72	12-18-72
MAIL – OWNERS	1	7		7	5	2	3
AMERICAN BUREAU							
LLOYD'S R.S.							
U.S.M.A.							
U.S. NAVY							
U.S.C.G.	3	3		3	3	3	
JOINER CONT'R.							
INSPECTION – OWNER'S INSP.			1	1		1	1
AM. BU. INSP.							
LLOYD'S INSP.							
U.S.M.A. INSP.			1	1		1	1
U.S. NAVY INSP.							
U.S.C.G. INSP.							
OFFICE – HULL DRAFT.-21	1		1	1		1	1
MACH. DRAFT.-22	1		1	1		1	1
ELEC. DRAFT.-23	1		1	1		1	1
OUTFIT DRAFT.-25							
ESTIMATING							
ROBERTS - SHIP SUPT.	1						
MISC. – PRODUCTION (BCD)							
ORDER DEPT.							
JOINER CONT. YARD							
NELSON - PLANNING	2						
TOTAL ENG'R. DIST.	15	10	5	15	8	10	8
YARD DISTRIBUTION	8/12/71	1/5/72	9/6/72	12/18/72			
YARD – PLAN'G	1	1	1	1			
A. J. DALBY	3	3	3	3			
PIECE RATE-11	1	1	1	1			
TEST DEPARTMENT							
J. MINER, TEST SUPT.				2			
STRUC. PLANNING							
STRUCTURAL – GROUND ASSEMBLY	4	4	2	2			
35 DEPT.	2	2	2	2			
X-RAY	1	1	1	1			
NO. WAY							
NO. WAY							
NO. WAY							
NO. WAY							
STRUCT. SUPER.	2	2	2	2			
OPTICAL DETAIL-45	2	2	2	2			
WET DOCK							
MACH'Y & OUTFIT. – PIPE SHOP-52	8	8	6	6			
OUTFIT. #1 PIER							
PIPE DRAFT.-52	2	2	2	2			
BOILER SHOP-58							
OUTSIDE MACH.-60	2	2	1	1			
ELECTRIC SHOP-70	1	1	1	1			
SHEET MET. SHOP-74	3	3	2	2			
COPPER SHOP-51							
PAINT SHOP-75	1	1	1	1			
OTHER – WELDING	1	1	1	1			
MOLD LOFT-41	1	1	1	1			
BRACKET SHOP							
P-MAT'L	2	2	1	1			
ORDER DEPT.	1	1	1	1			
TOTAL YARD DIST.	38	38	31	33			

4639, 40 - ALT. 4

3 2 1

M-427 37.5 SQ. FT.

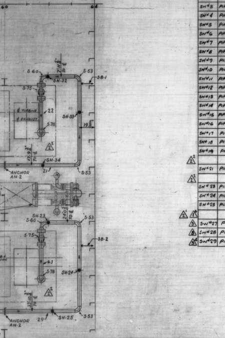
F 1
M-4639-371-09-1 Sys. 26 ALT. 4
M-427
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

STUD & GASKET LIST

ALT. No.	ITEM No.	PIPE SIZE	PRESS	MAX. TEMP.	GASKET AMT.	GASKET TYPE	GASKET MATERIAL	STUD AMT.	STUD DIA.	STUD LG.	STUD MAT'L.	SERVICE	ANSI	REMARKS	REQ. No. GASKETS	REQ. No. STUDS	REQN. NUTS
△2 (1)	31	10"	1500#	960°F	2	FLEX. STYLE CG	STAIN. STEEL	24	1 7/8"	13 1/4"	CR.MO.	SUP'H'T'D. STEAM TO SYSTEM	B16.20	SEE GEN. NOTE # 7 & 9	(2)392112 39385-A	(8)392119 39384-A	(4)39217 39387-C
	32	8"	1500#	960°F	8	FLEX. STYLE CG	STAIN. STEEL	96	1 5/8"	11 1/4"	CR.MO.	SUP'H'T'D. STEAM TO SYSTEM				39384-A	
	33	6"	1500#	960°F	11	FLEX. STYLE CG	STAIN. STEEL	132	1 3/8"	10"	CR.MO.	ASTERN STM., EMER. STM. TO L.P. TURBINE			39385-A IX		(100)39387-C (b)39387C-IX
	34	4"	1500#	960°F	14	FLEX. STYLE CG	STAIN. STEEL	112	1 1/4"	7 1/2"	CR.MO.	SUP'H'T'D. STM. TO TURBO-GEN., SUP'H'T. CONTROL STM.					39387-C 39387-D
△2 (2)	35	3"	1500#	960°F	6	FLEX. STYLE CG	STAIN. STEEL	48	1 1/8"	6 3/4"	CR.MO.	SUP'H'T'D. STM. TO TURBO-GEN.			(6)392112 39385-A	(38)392119 39384-A	(8)39387 39387C-IX
	36	2"	1500#	960°F	2	FLEX. STYLE CG	STAIN. STEEL	16	7/8"	5 1/2"	CR.MO.	SUP'H'TR. SAFETY VALVE				39384-A	39387C-IX 39387-C
	37	1"	1500#	960°F	6	FLEX. STYLE CG	STAIN. STEEL	24	7/8"	4 3/4"	CR.MO.	RECIRC. STEAM					
△1 (1)	38	3/4"	1500#	960°F	51	FLEX. STYLE CG	STAIN. STEEL	204	3/4"	4 1/4"	CR.MO.	DRAINS			(8)39385-B (43)39385-A		39387-C 39387C-IX
	39	1/2"	1500#	960°F	7	FLEX. STYLE CG	STAIN. STEEL	28	3/4"	4"	CR.MO.	DRAINS & SUPH'TR. HDR. VENTS			39385-A		39387-C-IX 39387-D
	40	5"	600#	960°F	4	FLEX. STYLE CG	STAIN. STEEL	16	1"	7 1/2"	CR.MO.	SATURATED STM. AT FLOW NOZZLE					39387C/IX
	41	1 1/4"	1500#	960°F	6	FLEX. STYLE CG	STAIN. STEEL	24	7/8"	4 3/4"	CR.MO.	DRAINS			39385-B		39387-C 39387C-IX
	42	1/2"	600#	538°F	4	FLEX. STYLE CG	STAIN. STEEL	16	1/2"	3"	CR.MO.	BOILER VENTS			SUP. SHT. 39-84-1245		39387C-IX

FLANGE LIST

ALT. No.	ITEM No.	AMT	SIZE	TYPE	MATERIAL	A.S.T.M.	PRESS STD.	SCH. BORE	LOCATION	CAT. OR DRWG. No.	REMARKS	ANSI	REQ. No.	REQ. No.
△2 (1)	1	4	10"	WELD. NECK	FORGED CR MO	A-182 F-11	1500#	120	11, 12, 12-1 F.&D.	TUBE TURN #35		B16.5	39383-F	(4)39213
	2	9	8"	WELD. NECK	FORGED CR MO	A-182 F-11	1500#	120	5, 6, 6-1, 8, 9, 10, 11, 12-1 F.&D.	TUBE TURN #35				
	3	9	6"	WELD. NECK	FORGED CR MO	A-182 F-11	1500#	120	10, 13, 14, 15, 16 F.&D.	TUBE TURN #35				
	4	10	4"	WELD. NECK	FORGED CR MO	A-182 F-11	1500#	120	6-1, 10, 19, 20, 21, 25, 28, 29 F.&D.	TUBE TURN #35				
△2 (2)	5	6	3"	WELD. NECK	FORGED CR MO	A-182 F-11	1500#	160	21, 22, 29, 63 F.&D.	TUBE TURN #35				(8)39213
	6	2	2"	SOCK. WELD	FORGED CR MO	A-182 F-11	1500#	160	40, 41 F.&D.	TUBE TURN #1558				
	7	2	1"	SOCK. WELD	FORGED CR MO	A-182 F-11	1500#	80	42, 43 F.&D.	TUBE TURN #1558				
△2 △1	8	18	3/4"	SOCK. WELD	FORGED CR MO	A-182 F-11	1500#	80	44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 F.&D.	TUBE TURN #1558			(3)39383-G (31)39383-B	(2)39213
	9	1	1/2"	SOCK. WELD	FORGED CR MO	A-182 F-11	1500#	80	60 F.&D.	TUBE TURN #1558			39383-F	
	10	4	1/2"	BLIND	FORGED CR MO	A-182 F-11	1500#	—	BOILER SUPHTR. VENT F.&D.	TUBE TURN #75			39383-B	
	11	1	6"	WELD. NECK	FORGED STEEL	A-105 GR.2	1500#	120	17 F.&D.	TUBE TURN #35			39383-F	
	12	1	6"	WELD. NECK	FORGED STEEL	A-105 GR.2	900#	120	17 F.&D.	TUBE TURN #34				
	13	4	5"	WELD. NECK	FORGED STEEL	A-105 GR.2	600#	80	1, 2, 3, 4 F.&D.	TUBE TURN #33			39383-B	
	14	4	4"	WELD. NECK	FORGED STEEL	A-105 GR.2	1500#	80	35, 36, 38, 39 F.&D.	TUBE TURN #35				
	15	1	6"	BLIND	FORGED STEEL	A-105 GR.2	1500#	—	FITTING S-67 F.&D.	TUBE TURN #75			39383-F	
	16	1	1 1/4"	SOCK. WELD	FORGED CR MO	A-182 F-11	1500#	80	61 F.&D.	TUBE TURN #1558			39383-F	
	17	1	1 1/4"	SOCK. WELD	FORGED STEEL	A-105 GR.2	1500#	80	62 F.&D.	TUBE TURN #1558			39383-F	



SHIP WELDS

WELD No.	LOCATION
SW#1	PIPE 3 & PORT BLR. SAT. STEAM OUTLET
SW#2	PIPE 4 & PORT BLR. SUP'H'T'D. STEAM INLET
SW#3	PIPE 37 & PORT BLR. CONTROL STEAM OUTLET
SW#4	PIPE 37 & PORT BLR. CONTROL STEAM INLET
SW#5	PIPE 38 & PORT BLR. CONTROL STEAM OUTLET
SW#6	PIPE 39 & PORT BLR. CONTROL STEAM INLET
SW#7	PIPE 8 & PORT BLR. SUP'H'T'D. STEAM OUTLET
SW#8	PIPE 33 & PORT BLR. DESUP. STEAM INLET
SW#9	PIPE 1 & STB'D. BLR. SAT. STEAM OUTLET
SW#10	PIPE 2 & STB'D. BLR. SUP'H'T'D. STEAM INLET
SW#11	PIPE 34 & STB'D. BLR. CONTROL STEAM OUTLET
SW#12	PIPE 34 & STB'D. BLR. CONTROL STEAM INLET
SW#13	PIPE 35 & STB'D. BLR. CONTROL STEAM OUTLET
SW#14	PIPE 36 & STB'D. BLR. CONTROL STEAM INLET
SW#15	PIPE 5 & STB'D. BLR. SUP'H'T'D. STEAM OUTLET
SW#16	PIPE 32 & STB'D. BLR. DESUP. STEAM INLET
SW#17	PIPE 8 & PIPE 33
SW#18	PIPE 5 & PIPE 32
SW#19	PIPE 9-1 & PIPE 10
△2 (2)	
SW#21	PIPE 19 & PIPE 20
△2 (2)	
SW#23	PIPE 25 & PIPE 26
SW#24	PIPE 26 & PIPE 27
SW#25	PIPE 27 & PIPE 28
△2 (1) △1 (6)	
△3 SW#27	PIPE 6 & PIPE 6-1
△3 SW#28	PIPE 9 & PIPE 9-1
△3 (4) SW#29	PIPE 12 & PIPE 12-2

FITTING LIST

ALT. No.	FITTING No.	AMT.	SIZE	ANSI	MATERIAL	A.S.T.M.	DESCRIPTION	CAT. OR DRWG. No.	SERVICE	REMARKS	REQ. No.	REQ. No.
	S-50	5	10"	B16.9	SEAMLESS CR MO. STEEL	A-234 WP-11	SCH. 120 L.R. 90° WELDELL	TUBE TURN #1201	11, 12, 12-1		(4)39380-F (6)39380-B	
	S-51	8	8"		SEAMLESS CR MO STEEL	A-234 WP-11	SCH. 120 L.R. 90° WELDELL	TUBE TURN #1201	6, 6-1, 9, 9-1		39380-B	
	S-52	6	6"		SEAMLESS CR MO STEEL	A-234 WP-11	SCH. 120 L.R. 90° WELDELL	TUBE TURN #1201	14, 15		39380-B	
△2 (2) △1 (5)	S-53	24	4"		SEAMLESS CR MO STEEL	A-234 WP-11	SCH. 120 L.R. 90° WELDELL	TUBE TURN #1201	19, 20, 21, 25(6), 29, 32, 33, 34, 37		(11)39380-H (20)39380-B	(8)39211
	S-55	2	6"	B16.9	SEAMLESS STEEL	A-234 WPB	SCH. 120 L.R. 90° WELDELL	TUBE TURN #1201	17		39380-H	
	S-56	6	5"		SEAMLESS STEEL	A-234 WPB	SCH. 80 L.R. 90° WELDELL	TUBE TURN #2	1, 2, 3, 4		39380-B	
	S-57	6	4"		SEAMLESS STEEL	A-234 WPB	SCH. 80 L.R. 90° WELDELL	TUBE TURN #2	35, 36, 38, 39		39380-B	
	S-58	2	10"x8"		SEAMLESS CR MO STEEL	A-234 WP-11	SCH. 120 CONC. WELD. REDUCER	TUBE TURN #1290	11		39380-B	
	S-59	1	10"x8"		SEAMLESS CR MO STEEL	A-234 WP-11	SCH. 120 ECC. WELD. REDUCER	TUBE TURN #1292	12-1		39380-B	
	S-60	2	4"x3"		SEAMLESS CR MO STEEL	A-234 WP-11	L.R. 90° RED. WELDELL - 4" SCH. 120 X 3" SCH. 160	TUBE TURN	21, 29		39380-B	
	S-61	1	10"		SEAMLESS CR MO STEEL	A-234 WP-11	SCH. 120 WELDTEE	TUBE TURN #1220	11		39380-B	
	S-62	2	4"		SEAMLESS CR MO STEEL	A-234 WP-11	SCH. 120 WELDTEE	TUBE TURN #1220	19, 25		39380-B	
	S-63	1	8"x6"		FORGED CR MO STEEL	A-182 F-11	SCH. 120 WELDOLET I.P.S. RUN & OUTLET	BONNEY FORGE	10		39382	
	S-64	4	6"x4"		FORGED CR MO STEEL	A-182 F-11	SCH. 120 WELDOLET I.P.S. RUN & OUTLET	BONNEY FORGE	5, 6-1, 8, 10		39382-B	
	S-65	2	—	—	STAINLESS STEEL	—	FLOW NOZZLE	BADGER METER DRWG. No. SK. 5073			—	
	S-66	1	6"	—	CR MO STEEL	A-217 WC-6	1500# FLGD., VENTURI TYPE DESUPERHEATER	SCHUTTE KOERTING DWG. 70-XC-85	EMER. STEAM TO L.P. TURBINE		—	
	S-67	1	6"	—	CAST STEEL	A-216 WCB	1500# FLGD., "Y" STRAINER, F.&D.	LESLIE FIG 7213	EMER. STEAM TO L.P. TURBINE	COVER FLG. BORED 1 1/2" SCH. 80 BLOWOFF	393811-B	
	S-68	1	2 1/2"	B36.10	SEAMLESS CR MO STEEL	A-335 WP-11	PORT BOILER FLASH CHAMBER Volume = .0266 Cu. Ft.	M-4639-371-09-2 SH. #41	BOILER FEED CONTROL	ORDER 1'-0" 2 1/2" SCH. 160 PIPE		
	S-69	1	2 1/2"	B36.10	SEAMLESS CR MO STEEL	A-335 WP-11	STBD. BOILER FLASH CHAMBER Volume = .0266 Cu. Ft.	M-4639-371-09-2 SH. #42	BOILER FEED CONTROL	ORDER 1'-0" 2 1/2" SCH. 160 PIPE		
	S-70	4	2 1/2"	B16.9	SEAMLESS CR MO STEEL	A-234 WP11	SCH. 160 WELDING CAP	TUBE TURN #84	FOR S-68 & S-69		39380-B	
	S-71	2	1/2"	B16.11	FORGED CR MO STEEL	A-182 F-11	HEX. HEAD SCRD. PIPE PLUG	WATSON-STILLMAN #1630	FOR S-68 & S-69		39381-A	
	S-72	1	8"	—	CR MO STEEL	A-217 WC-6	900# "Y" TYPE STRAINER	GIMPEL MACH. WORKS DWG. NP-736 REV. A	SUPH'T'D. STEAM TO H.P. TURBINE	FURN. WITH TURB. 1500# A.S.A. INLET & OUTLET	—	
	S-73	8	3/4"	B16.11	FORGED CR MO STEEL	A-182 F-11	3000# S.W. 90° ELBOW	WATSON-STILLMAN #470	45, 47, 48, 49, 50, 51,		39381-B	
	S-74	1	1/2"	B16.11	FORGED CR MO STEEL	A-182 F-11	3000# S.W. 90° ELBOW	WATSON-STILLMAN #470	60		39381-A	
	S-75	2	3"	—	CR MO STEEL	A-217 WC-9	900# "Y" TYPE STRAINER	GIMPEL MACH. WORKS DWG. NP-732 REV. A	SUPH'T'D. STEAM TO TURBO-GENERATOR	FURNISHED WITH GENS. 1500# ASA INLET & OUTLET	—	
	S-76	1	1 1/4"	B16.11	FORGED CR MO STEEL	A-182 F-11	3000# S.W. 90° ELBOW	WATSON-STILLMAN #470	61		39381-A	
	S-77	1	1 1/4"	B16.11	FORGED STEEL	A-105 GR.2	3000# S.W. 90° ELBOW	WATSON-STILLMAN #470	62		39381-B	
△2 (2)	S-78	2	3"	B16.9	SEAM. CR. MO	A-234 WP-11	SCH. 160 L.R. 90° WELDELL	TUBE TURN #43	22, 63		39211	

7 6 5 4

F 2

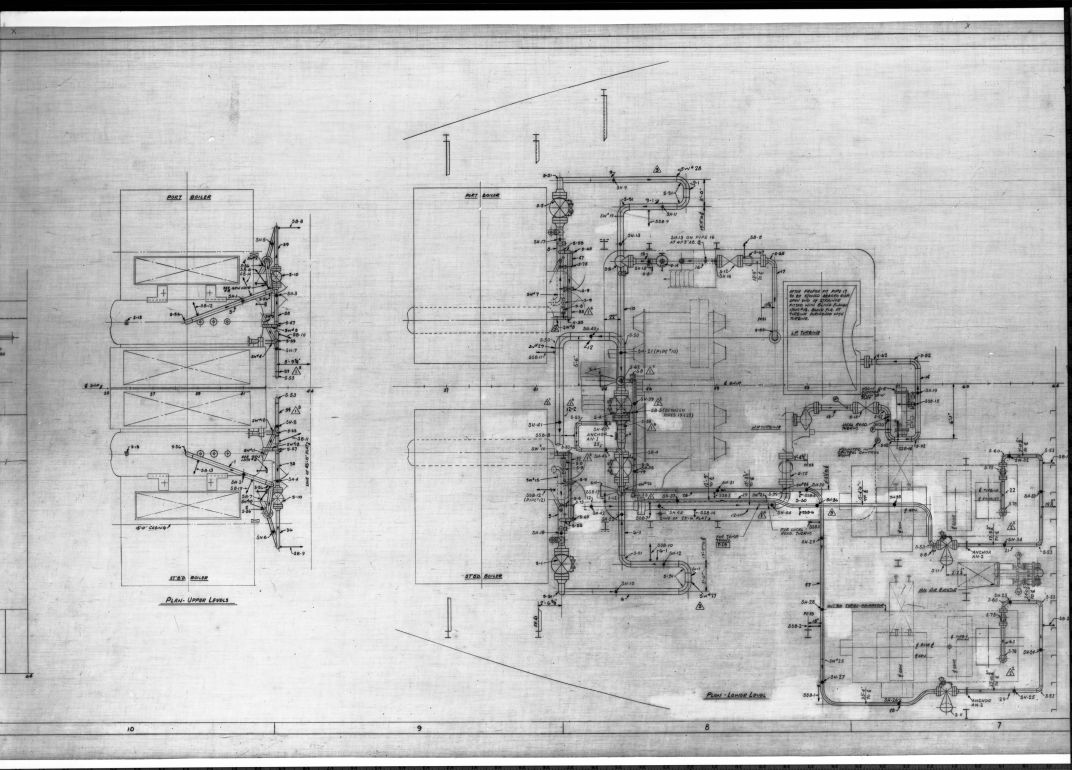
M-4639-371-09-1 Sys. 26 ALT. 4

M-427

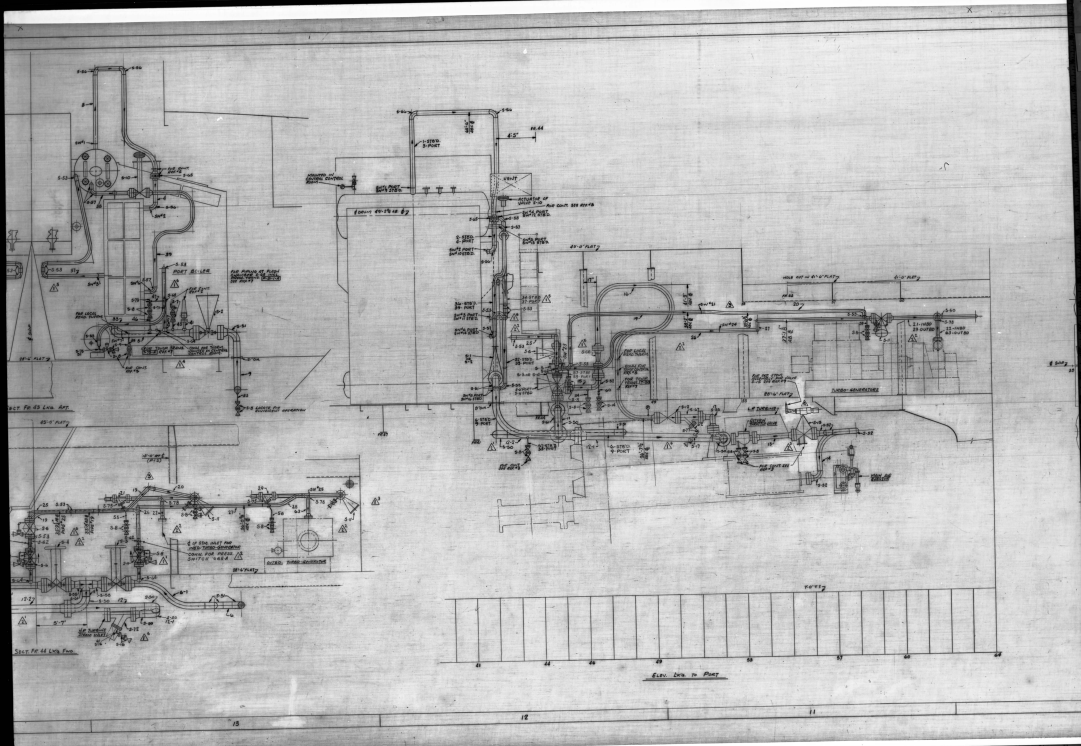
BETHLEHEM STEEL CORP. JULY 1974

H 4639-4640

8X



F 3
M. 4639-371-09.1
Sys. 26 Alt. 4
M-427
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 4

M-4639-371-09-1
Sys. 26 Alt. 4
M-427

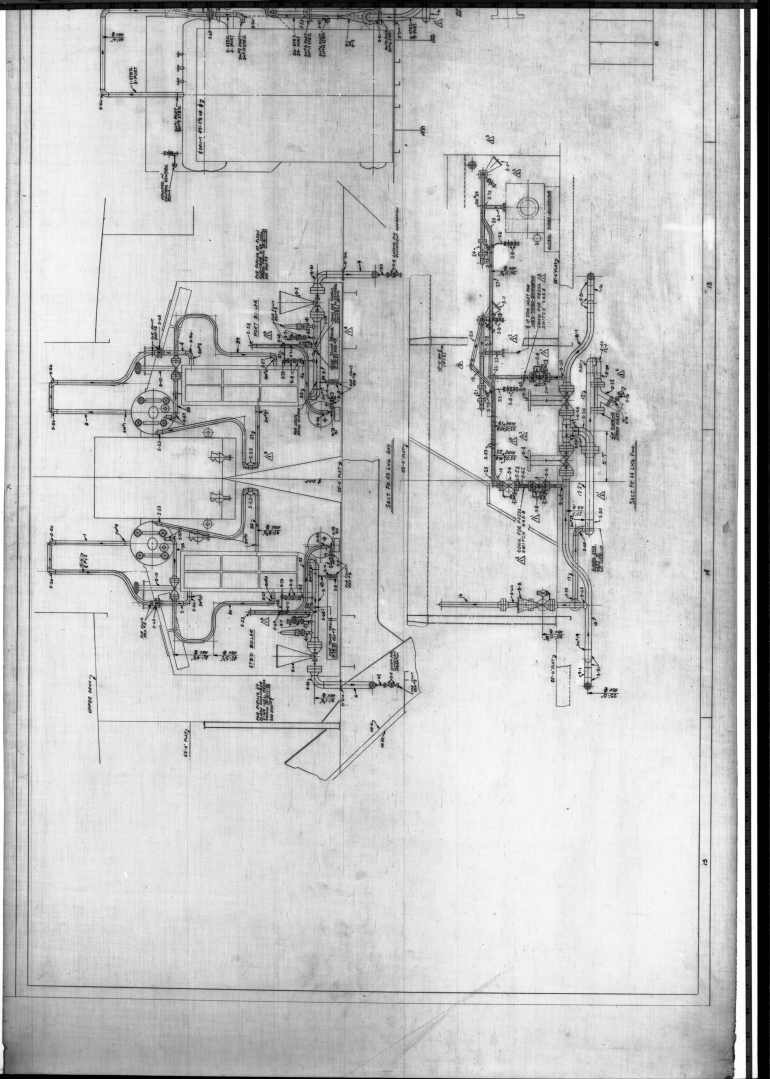
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

M-4639-371-09-1
SYS-26 ALT 4

M-427

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 8X

F 5



M-4639-371-09-2
ALT. 3
M-428 SHT 1, 3, 4

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

M-4639-371-09-2
SYS-24 ALT. 3
M-428 SHT. 56, 78
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

NO.	MAT'L	MATL	DESCRIPTION
1	1-1/8"	A588	5" SCH 80 PIPE
2	1"	A588	5" SCH 80 PIPE
3	1"	A588	5" SCH 80 PIPE
4	3/4"	A588	5" SCH 80 PIPE
5	1"	A588	5" SCH 80 PIPE

STRINGER-1

STRINGER-2

CERTIFIED PIPING STD. EF-334

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD

DETAILS OF PIPING STEAM PIPES

M-4639-371-09-2 SHT. 9

NO.	MAT'L	MATL	DESCRIPTION
1	1-1/8"	A588	5" SCH 80 PIPE
2	1"	A588	5" SCH 80 PIPE
3	1"	A588	5" SCH 80 PIPE
4	3/4"	A588	5" SCH 80 PIPE
5	1"	A588	5" SCH 80 PIPE

STRINGER-1

STRINGER-2

CERTIFIED PIPING STD. EF-334

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD

DETAILS OF PIPING STEAM PIPES

M-4639-371-09-2 SHT. 8

NO.	MAT'L	MATL	DESCRIPTION
1	1-1/8"	A588	5" SCH 80 PIPE
2	1"	A588	5" SCH 80 PIPE
3	1"	A588	5" SCH 80 PIPE
4	3/4"	A588	5" SCH 80 PIPE
5	1"	A588	5" SCH 80 PIPE

STRINGER-1

STRINGER-2

CERTIFIED PIPING STD. EF-334

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD

DETAILS OF PIPING STEAM PIPES

M-4639-371-09-2 SHT. 10

NO.	MAT'L	MATL	DESCRIPTION
1	1-1/8"	A588	5" SCH 80 PIPE
2	1"	A588	5" SCH 80 PIPE
3	1"	A588	5" SCH 80 PIPE
4	3/4"	A588	5" SCH 80 PIPE

STRINGER-1

STRINGER-2

CERTIFIED PIPING STD. EF-334

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD

DETAILS OF PIPING STEAM PIPES

M-4639-371-09-2 SHT. 11

NO.	MAT'L	MATL	DESCRIPTION
1	1-1/8"	A588	5" SCH 80 PIPE
2	1"	A588	5" SCH 80 PIPE
3	1"	A588	5" SCH 80 PIPE
4	3/4"	A588	5" SCH 80 PIPE

STRINGER-1

STRINGER-2

CERTIFIED PIPING STD. EF-334

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD

DETAILS OF PIPING STEAM PIPES

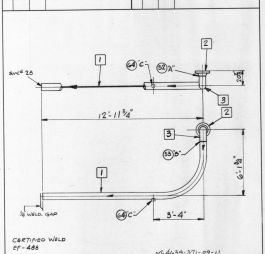
M-4639-371-09-2 SHT. 12

M-4639-371-01-2
SYS-22 ALT. 3
M-428 SHTS 9,10,11,14

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

PIPE SKETCHES

NO.	AMT.	MATL.	DESCRIPTION	NO.	AMT.	MATL.	DESCRIPTION
1	16'-0	A-335 P-11	8" SCH. 120 PIPE	52	1	CAMP	8" TYPE "A" CHILL RING
2	1	A-182 P-11	8"-1500# W.N. FLG. (ITEM #2)	53	1	CAMP	8" TYPE "B" CHILL RING
3	1	A-234 WP-11	8" SCH. 120 L.R. 90° WELDELL (S-81)	54	1	A-182 P-11	3/4" SQ. HVY. SOCC. WELD BOSS, FIG. 8 EF-488



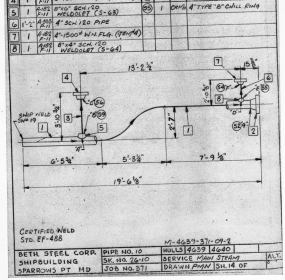
CERTIFIED WELD
EF-488

M-4639-371-09-11

BETHLEHEM STEEL CORPORATION SHIPBUILDING DEPARTMENT SPARROWS POINT, MD.	PIPE No. 9	HULLS 4639 4640	
	SK. No. 26-9	SERVICE MAIN STEAM	ALT.
	JOB No. 371	DRAWN RMN	SH. 13 OF

PIPE SKETCHES

NO.	AMT.	MATL.	DESCRIPTION	NO.	AMT.	MATL.	DESCRIPTION
1	19'-8	A-335 P-11	8" SCH. 120 PIPE	52	1	CAMP	8" TYPE "A" CHILL RING
2	1	A-182 P-11	8"-1500# W.N. FLG. (ITEM #2)	53	1	CAMP	6" TYPE "A" CHILL RING
3	2 1/2	A-182 P-11	6" SCH. 120 PIPE	59	1	CAMP	6" TYPE "B" CHILL RING
4	1	A-182 P-11	6"-1500# W.N. FLG. (ITEM #3)	60	1	CAMP	4" TYPE "A" CHILL RING
5	1	A-182 P-11	6"x6" SCH. 120 WELDOLET (S-63)	55	1	CAMP	4" TYPE "B" CHILL RING
6	1 1/2	A-335 P-11	4" SCH. 120 PIPE				
7	1	A-182 P-11	4"-1500# W.N. FLG. (ITEM #4)				
8	1	A-182 P-11	8"x4" SCH. 120 WELDOLET (S-64)				



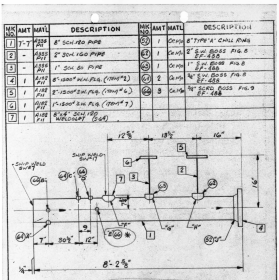
CERTIFIED WELD
STD. EF-488

M-4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT MD	PIPE NO. 10	HULLS 4639 4640	
	SK. NO. 26-10	SERVICE MAIN STEAM	ALT.
	JOB NO. 371	DRAWN RMN	SH. 14 OF

PIPE SKETCHES

NO.	AMT.	MATL.	DESCRIPTION	NO.	AMT.	MATL.	DESCRIPTION
1	7'-7	A-335 P-11	8" SCH. 120 PIPE	52	1	CAMP	8" TYPE "A" CHILL RING
2	-	A-335 P-11	2" SCH. 160 PIPE	62	1	CAMP	2" S.W. BOSS FIG. 8 EF-488
3	-	A-182 P-11	1" SCH. 80 PIPE	63	1	CAMP	1" S.W. BOSS FIG. 8 EF-488
4	1	A-182 P-11	8"-1500# W.N. FLG. (ITEM #2)	61	2	CAMP	3/4" S.W. BOSS FIG. 8 EF-488
5	1	A-182 P-11	2"-1500# S.W. FLG. (ITEM #6)	64	3	CAMP	3/4" SCRD. BOSS FIG. 9 EF-488
6	1	A-182 P-11	1"-1500# S.W. FLG. (ITEM #7)				
7	1	A-182 P-11	8"x4" SCH. 120 WELDOLET (S-64)				



* 13/16" DRILL AFTER WELDING

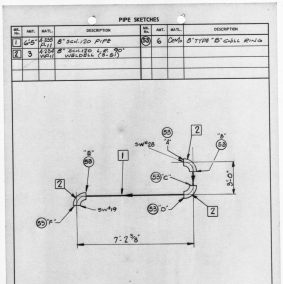
CERTIFIED WELD
STD. EF-488

M-4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT MD	PIPE NO. 8	HULLS 4639 4640	
	SK. NO. 26-8	SERVICE MAIN STEAM	ALT.
	JOB NO. 371	DRAWN RMN	SH. 12 OF

PIPE SKETCHES

NO.	AMT.	MATL.	DESCRIPTION	NO.	AMT.	MATL.	DESCRIPTION
1	6'-5	A-335 P-11	8" SCH. 120 PIPE	53	6	CAMP	8" TYPE "B" CHILL RING
2	3	A-234 WP-11	8" SCH. 120 L.R. 90° WELDELL (S-81)				



CERTIFIED WELD
EF-488

M-4639-371-09-2

BETHLEHEM STEEL CORPORATION SHIPBUILDING DEPARTMENT SPARROWS POINT, MD.	PIPE No. 9-1	HULLS 4639 4640	
	SK. No. 26-9-1	SERVICE MAIN STEAM	ALT.
	JOB No. 371	DRAWN RMN	SH. 13-A OF

M-4639-371-09-2
SYS-26 ALT. 3
M-42Y SHT. 12, 13, 13A, 14

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

M-4639-371-09-2
SYS-24 ALT. 3
M-420 SHT. 13, 16, 17, 18

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

MK NO	QUANT	MATL	DESCRIPTION
1	1	PL25	10'-0" DIA. PIPE
2	1	PL25	8'-0" DIA. PIPE
3	1	PL25	6'-0" DIA. PIPE
4	1	PL25	4'-0" DIA. PIPE
5	1	PL25	2'-0" DIA. PIPE
6	1	PL25	10" DIA. PIPE

Contract No. 4639
STD. EF-488

BETH. STEEL CORP.
SHIPBUILDING
SPARROWS PT., MD.

DWG. NO. 4639-371-09-2
DWG. NO. 371
DRAWN PWM SH. 18 OF 18

MK NO	QUANT	MATL	DESCRIPTION
1	1	PL25	10'-0" DIA. PIPE
2	1	PL25	8'-0" DIA. PIPE
3	1	PL25	6'-0" DIA. PIPE
4	1	PL25	4'-0" DIA. PIPE
5	1	PL25	2'-0" DIA. PIPE
6	1	PL25	10" DIA. PIPE

Contract No. 4639
STD. EF-488

BETH. STEEL CORP.
SHIPBUILDING
SPARROWS PT., MD.

DWG. NO. 4639-371-09-2
DWG. NO. 371
DRAWN PWM SH. 18 OF 18

MK NO	QUANT	MATL	DESCRIPTION
1	1	PL25	10'-0" DIA. PIPE
2	1	PL25	8'-0" DIA. PIPE
3	1	PL25	6'-0" DIA. PIPE
4	1	PL25	4'-0" DIA. PIPE
5	1	PL25	2'-0" DIA. PIPE
6	1	PL25	10" DIA. PIPE

Contract No. 4639
STD. EF-488

BETH. STEEL CORP.
SHIPBUILDING
SPARROWS PT., MD.

DWG. NO. 4639-371-09-2
DWG. NO. 371
DRAWN PWM SH. 18 OF 18

MK NO	QUANT	MATL	DESCRIPTION
1	1	PL25	10'-0" DIA. PIPE
2	1	PL25	8'-0" DIA. PIPE
3	1	PL25	6'-0" DIA. PIPE
4	1	PL25	4'-0" DIA. PIPE
5	1	PL25	2'-0" DIA. PIPE
6	1	PL25	10" DIA. PIPE

Contract No. 4639
STD. EF-488

BETH. STEEL CORP.
SHIPBUILDING
SPARROWS PT., MD.

DWG. NO. 4639-371-09-2
DWG. NO. 371
DRAWN PWM SH. 18 OF 18

M-4434.371-04-2
SH-24, ALT. 3
M-428 SH. 19, 20, 21, 22

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 6X

M.4639-371-01-2
SYS-26 ALT. 3
M-428 SHT.23,24,25,26

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

M 4639-371-09-2
SYS-26 ALT. 3
M-427 SHT. 27 OF 29 SO

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

NO	QUANT	MATL	DESCRIPTION
1	2	PIPE	4" SCH. 160 PIPE
2	1	PIPE	4" 150# MAL. FLG. (1704 ⑨)
3	2	PIPE	3" SCH. 160 L.T.S. (739)
4	1	PIPE	3" 1500# MAL. SOC. (1704 ⑨)

CERTIFIED WELD SYD EFF 486

M 4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 26
SEC. NO. 26-23
DWG. NO. 371

SERVICE: MAIN STEAM
DESIGN PRESS. 1500#
DESIGN TEMP. 950°F

NO	QUANT	MATL	DESCRIPTION
1	2	PIPE	4" SCH. 160 PIPE
2	1	PIPE	4" 150# MAL. FLG. (1704 ⑨)
3	2	PIPE	3" SCH. 160 L.T.S. (739)
4	1	PIPE	3" 1500# MAL. SOC. (1704 ⑨)

CERTIFIED WELD SYD EFF. 486

M 4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 26
SEC. NO. 26-23
DWG. NO. 371

SERVICE: MAIN STEAM
DESIGN PRESS. 1500#
DESIGN TEMP. 950°F

NO	QUANT	MATL	DESCRIPTION
1	2	PIPE	4" SCH. 160 PIPE
2	1	PIPE	4" 150# MAL. FLG. (1704 ⑨)
3	2	PIPE	3" SCH. 160 L.T.S. (739)
4	1	PIPE	3" 1500# MAL. SOC. (1704 ⑨)

CERTIFIED WELD SYD EFF. 486

M 4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 26
SEC. NO. 26-23
DWG. NO. 371

SERVICE: MAIN STEAM
DESIGN PRESS. 1500#
DESIGN TEMP. 950°F

NO	QUANT	MATL	DESCRIPTION
1	2	PIPE	4" SCH. 160 PIPE
2	1	PIPE	4" 150# MAL. FLG. (1704 ⑨)
3	2	PIPE	3" SCH. 160 L.T.S. (739)
4	1	PIPE	3" 1500# MAL. SOC. (1704 ⑨)

CERTIFIED WELD SYD EFF. 486

M 4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 26
SEC. NO. 26-23
DWG. NO. 371

SERVICE: MAIN STEAM
DESIGN PRESS. 1500#
DESIGN TEMP. 950°F

BETHLEHEM STEEL CORP. JULY 1974
6X

M-4639-1/1-01-2
Sh's-24 ALT. 3
M-428 Sh's 31, 32, 33, 34
H 4639-4640

NO.	QUANT	MATL	DESCRIPTION	NO.	QUANT	MATL	DESCRIPTION
1	10'-0"	PIPE 16" Sch 160 PIPE					
2	2	PL 1/2" x 16" x 1'-5"					
3	2	PL 1/2" x 16" x 1'-10"		24	1	SHAPE 4" TYPE 'A' COLL RING	
4	1	PL 1/2" x 16" x 2'-3"		25	1	SHAPE 4" TYPE 'B' COLL RING	
5	1	PL 1/2" x 16" x 2'-7"		26	1	SHAPE 4" TYPE 'B' COLL RING	
6	1	PL 1/2" x 1'-10" x PL'S (11CH-4)		27	1	SHAPE 3" TYPE 'A' COLL RING	
7	1	PL 1/2" x 1'-10" x PL'S (11CH-5)					

CERTIFIED WELD
STD EF-488

BETH. STEEL CORP. | PURCH. NO. 23 | HULL 1463 | 1464 |
SHIPBUILDING | SK. NO. 36-57 | SERVICE PIPE STEAM |
SPARROWS PT. MD. | DSN. NO. 371 | DRAWN JMM | SH. 34 OF |

NO.	QUANT	MATL	DESCRIPTION
1	10'-0"	PIPE 16" Sch 160 PIPE	
24	1	SHAPE 4" TYPE 'A' COLL RING	

Certified Weld
Std. EF-488

BETH. STEEL CORP. | PURCH. NO. 23 | HULL 1463 | 1464 |
SHIPBUILDING | SK. NO. 36-58 | SERVICE FEED STEAM |
SPARROWS PT. MD. | DSN. NO. 371 | DRAWN JMM | SH. 35 OF |

NO.	QUANT	MATL	DESCRIPTION
1	10'-0"	PIPE 16" Sch 160 PIPE	
28	1	SHAPE 4" TYPE 'B' COLL RING	
29	1	SHAPE 4" SQ. BAR PER 8.36	

Certified Weld
Std. EF-488

BETH. STEEL CORP. | PURCH. NO. 23 | HULL 1463 | 1464 |
SHIPBUILDING | SK. NO. 36-59 | SERVICE FEED STEAM |
SPARROWS PT. MD. | DSN. NO. 371 | DRAWN JMM | SH. 36 OF |

NO.	QUANT	MATL	DESCRIPTION
1	10'-0"	PIPE 16" Sch 160 PIPE	
30	1	SHAPE 4" TYPE 'B' COLL RING	
31	1	SHAPE 4" SQ. BAR PER 8.36	

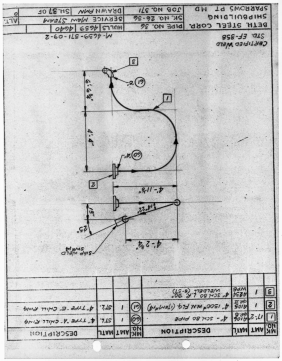
Certified Weld
Std. EF-488

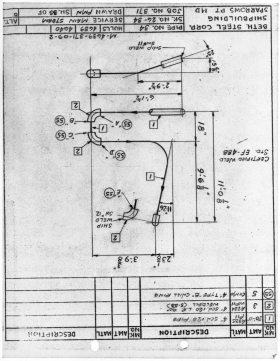
BETH. STEEL CORP. | PURCH. NO. 23 | HULL 1463 | 1464 |
SHIPBUILDING | SK. NO. 36-60 | SERVICE FEED STEAM |
SPARROWS PT. MD. | DSN. NO. 371 | DRAWN JMM | SH. 37 OF |

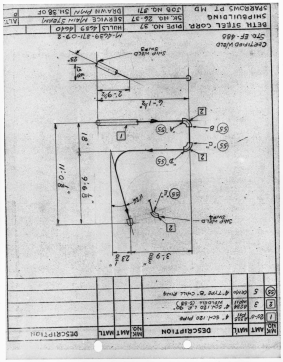
M-4639-371-09-2
SYS-26 ALT. 3
M-428 SHT. 35,36,37,38

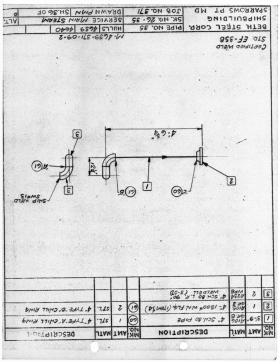
BETHLEHEM STEEL CORP. JULY 1974

H 4639-4640 6X

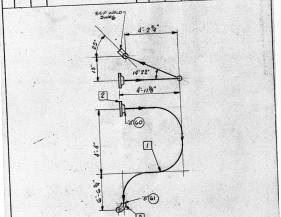








MK NO.	AMT	MAT'L	DESCRIPTION	MK NO.	AMT	MATL	DESCRIPTION
1	17'-2"	A106 GR.B	4" SCH. 80 PIPE	60	1	ST'L.	4" TYPE "A" CHILL RING
2	1	A105 GR.2	4" 1500# W.N. FLG. (ITEM #14)	61	1	ST'L.	4" TYPE "B" CHILL RING
3	1	A234 WPB	4" SCH. 80 L.R. 90° WELDELL (S-57)				

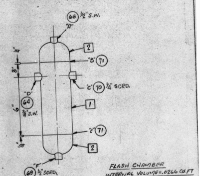


CERTIFIED WELD
STD. EF-358

M-4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT MD	PIPE NO. 39	HULLS 4639 4640		
	SK. NO. 26-39	SERVICE MAIN STEAM		ALT.
	JOB NO. 371	DRAWN PMN	SH. 40 OF	0

MK NO.	AMT	MAT'L	DESCRIPTION	MK NO.	AMT	MATL	DESCRIPTION
1	9"	A-335 P-11	2 1/2" SCH. 160 PIPE	64	1	CR MO	3/4" EX. HVY. S.W. BOSS, FIG. 8 EF-488
2	2	A-234 WP-11	2 1/2" WELD PIPE CAP (S-70)	68	1	CR MO	1/2" EX. HVY. S.W. BOSS, FIG. 8 EF-488
				69	1	CR MO	1/2" EX. HVY. SCRD. BOSS, FIG. 9, EF-488
				70	1	CR MO	1/4" EX. HVY. SCRD. BOSS, FIG. 9, EF-488
				71	2	CR MO	2 1/2" TYPE "B" CHILL RING



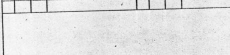
CERTIFIED WELD
EF-488

FLASH CHAMBER
INTERNAL VOLUME = .0266 CU. FT

M-4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT MD	PIPE NO. S-69	HULLS 4639 4640		
	SK. NO. 26-S-69	SERVICE MAIN STEAM		ALT.
	JOB NO. 371	DRAWN P.M.N.	SH. 42 OF	0

MK NO.	AMT	MAT'L	DESCRIPTION	MK NO.	AMT	MATL	DESCRIPTION
1	3'-9"	A106 GR.B	4" SCH. 80 PIPE	60	1	ST'L.	4" TYPE "A" CHILL RING
2	1	A105 GR.II	4" 1500# W.N. FLG. (ITEM #14)	61	2	ST'L.	4" TYPE "B" CHILL RING
3	2	A234 WPB	4" SCH. 80 L.R. 90° WELDELL (S-57)				

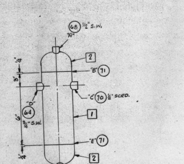


CERTIFIED WELD
STD EF-358

M-4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT MD	PIPE NO. 38	HULLS 4639 4640		
	SK. NO. 26-38	SERVICE MAIN STEAM		ALT.
	JOB NO. 371	DRAWN PMN	SH. 39 OF	0

MK NO.	AMT	MAT'L	DESCRIPTION	MK NO.	AMT	MATL	DESCRIPTION
1	9"	A-335 P-11	2 1/2" SCH. 160 PIPE	64	1	CR MO	3/4" EX. HVY. S.W. BOSS, FIG. 8 EF-488
2	2	A-234 WP-11	2 1/2" WELD PIPE CAP (S-70)	68	1	CR MO	1/2" EX. HVY. S.W. BOSS, FIG. 8, EF-488
				69	1	CR MO	1/2" EX. HVY. SCRD. BOSS, FIG. 9, EF-488
				70	1	CR MO	1/4" EX. HVY. SCRD. BOSS, FIG. 9, EF-488
				71	2	CR MO	2 1/2" TYPE "B" CHILL RING



CERTIFIED WELD
EF-488

FLASH CHAMBER
INTERNAL VOLUME = .0266 CU. FT.

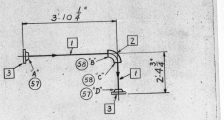
M-4639-371-09-2

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT MD	PIPE NO. S-68	HULLS 4639 4640		
	SK. NO. 26-S-68	SERVICE MAIN STEAM		ALT.
	JOB NO. 371	DRAWN P.M.N.	SH. 41 OF	0

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

M-4639-371-09-2
SYS-26 ALT. 3
M-428 SHT. 39, 40, 41, 42

MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	4'-0"	A-182 F.11	3" SCH. 160 PIPE	57	2	CR MP	3" TYPE "A" CHILL RING
2	1	A-234 WP.11	3" SCH. 160 L.R. 90° WELDELL (S-78)	58	2	CR MP	3" TYPE "B" CHILL RING
3	2	A-182 F.11	3"-1500# W.N. FLG (ITEM 5)				



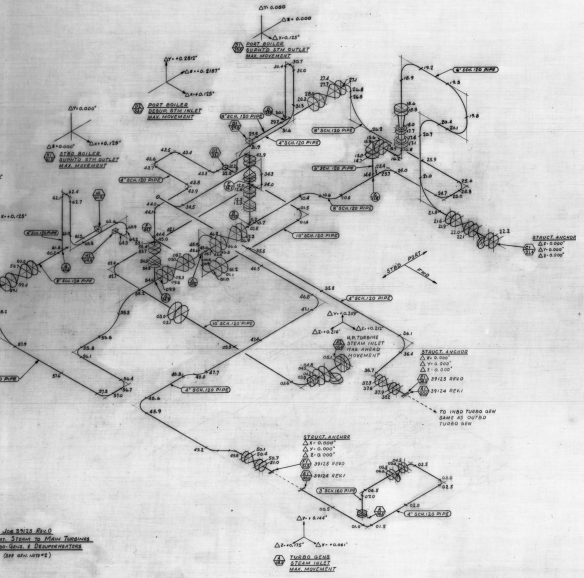
CERTIFIED WELD
STD EF 488

BETH STEEL CORP. SHIPBUILDING SPARROWS PT MD	PIPE NO. 63	HULLS 4639 4640				
	SK. NO. 26-63	SERVICE MAIN STEAM				ALT.
	JOB NO. 371	DRAWN J.K.	SH. 43 OF 43			1

M-428 SHT. 43

M-4639-371-09.2
SYS-26 ALT. 3

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X



Job 39125 Rev. 0
...t. Steam to Main Turbines
...bo-Gens. & Desuperheaters
(See Gen. Note #2)

Job 39124 Rev. 1
Supht Steam To Turbo Gen.
(See Gen. Note #2)

General Notes

1. This plan is for use in conjunction with the booklet of thermal stress calculations & Ref. #1
2. Operating temperature:
   a) Job № 39124 - 960°F @ 870 PSIG
   b) Job № 39105 - 950°F @ 870 PSIG
   c) Job № 39108 - 922°F @ 1012 PSIG
   d) Job № 39125 - 960°F @ 870 PSIG
3. Pipe material - CrMo - ASTM A335 Gr. P-11.

NO.	PLAN NO.	TITLE
2	M-4639-371-09-2	DETAILS OF MAIN STEAM PIPES
1	M-4639-371-09-1	ARRGT. & MAT'L.-MAIN STEAM PIPING

REFERENCE PLANS

ALTERATIONS					
NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.

HULL	DESIGN	CHARGE
4640	34,700 DWT. CONTAINERSHIP	10-4639
4639	34,700 DWT. CONTAINERSHIP	10-4639

JOB NO.

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE — DATE MAY 19, 1971
DRAWN P.M. NOWAK — APPROVED
TRACED — APPROVED
CHECKED — APPROVED

PLAN NO. M-4639-371-09-3 — ALT. NO. 0

ISOMETRIC
PIPE STRESS ANALYSIS
MAIN STEAM PIPING

APPROVAL LETTERS					
HULL					
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS					
A.B.S.					
U.S.C.G.					
LLOYD'S R.S.					
U.S.P.H.S.					

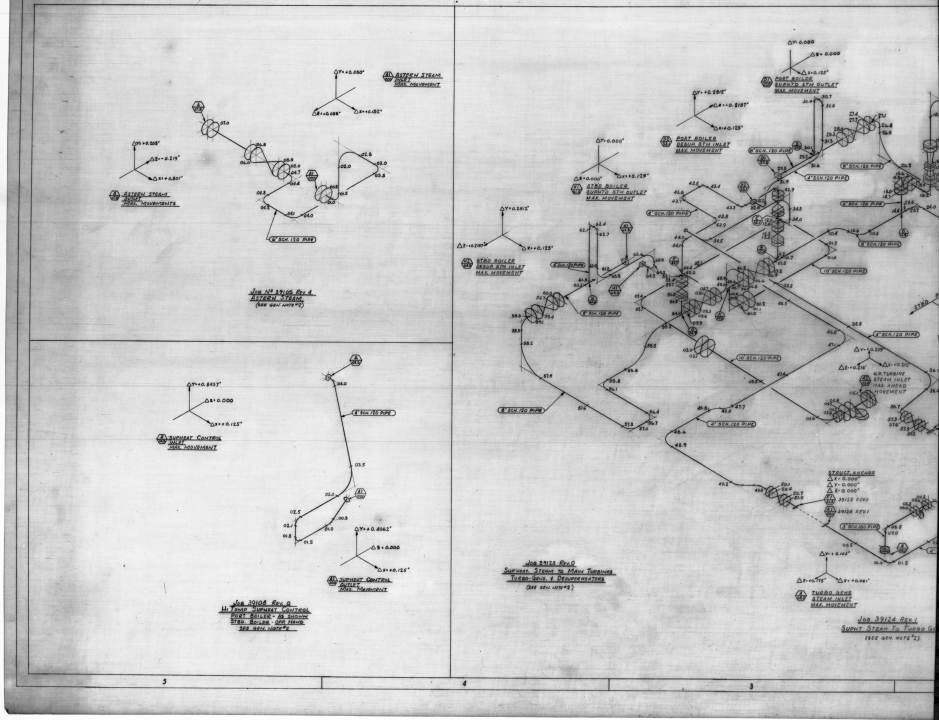
		DATE OF ISSUE
	ALTERATION	
	ENGINEERING DISTRIBUTION	
MAIL	OWNERS	
MAIL	AMERICAN BUREAU	
MAIL	LLOYD'S R.S.	
MAIL	U.S.M.A.	
MAIL	U.S. NAVY	
MAIL	U.S.C.G.	
MAIL	JOINER CONT'R.	
INSPECTION	OWNER'S INSP.	
INSPECTION	AM. BU. INSP.	
INSPECTION	LLOYD'S INSP.	
INSPECTION	U.S.M.A. INSP.	
INSPECTION	U.S. NAVY INSP.	
INSPECTION	U.S.C.G. INSP.	
OFFICE	HULL DRAFT.- 21	
OFFICE	MACH. DRAFT.- 22	
OFFICE	ELEC. DRAFT.- 23	
OFFICE	OUTFIT. DRAFT.- 25	
OFFICE	ESTIMATING	
MISC.	PRODUCTION (SCD)	
MISC.	ORDER DEPT.	
MISC.	JOINER CONT. YARD	
	TOTAL ENG'R. DIST.	
	YARD DISTRIBUTION	
YARD	CPM	
YARD	PIECE RATE - 11	
YARD	TEST DEPARTMENT	
YARD	STRUC. PLANNING	
STRUCTURAL	GROUND ASSEMBLY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	NO. WAY	
STRUCTURAL	STRUCT. SUPER.	
STRUCTURAL	OPTICAL DETAIL-45	
STRUCTURAL	WET DOCK	
MACH'Y & OUTFIT.	PIPE SHOP - 52	
MACH'Y & OUTFIT.	OUTFIT. #1 PIER	
MACH'Y & OUTFIT.	PIPE DRAFT. - 52	
MACH'Y & OUTFIT.	BOILER SHOP - 58	
MACH'Y & OUTFIT.	OUTSIDE MACH. - 60	
MACH'Y & OUTFIT.	ELECTRIC SHOP - 70	
MACH'Y & OUTFIT.	SHEET MET. SHOP - 74	
MACH'Y & OUTFIT.	COPPER SHOP - 51	
MACH'Y & OUTFIT.	PAINT SHOP - 75	
MACH'Y & OUTFIT.	WELDING	
OTHER	MOLD LOFT - 41	
OTHER	BRACKET SHOP	
	TOTAL YARD DIST.	

3 — 2 — 1

M-429 — 12.5 SQ. FT.

F
1
M-4639-371-09-3 ALT. -
M-429

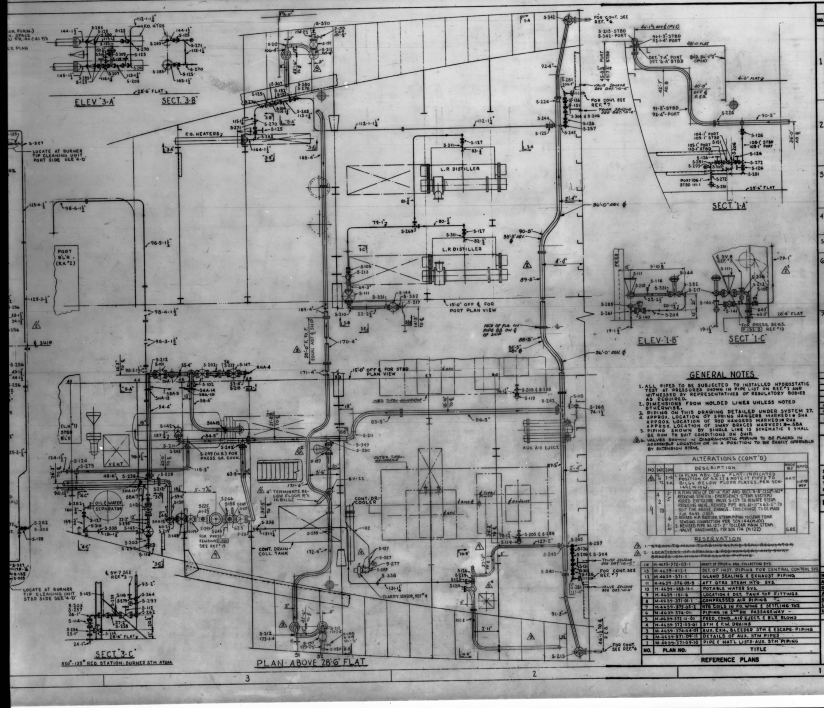
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

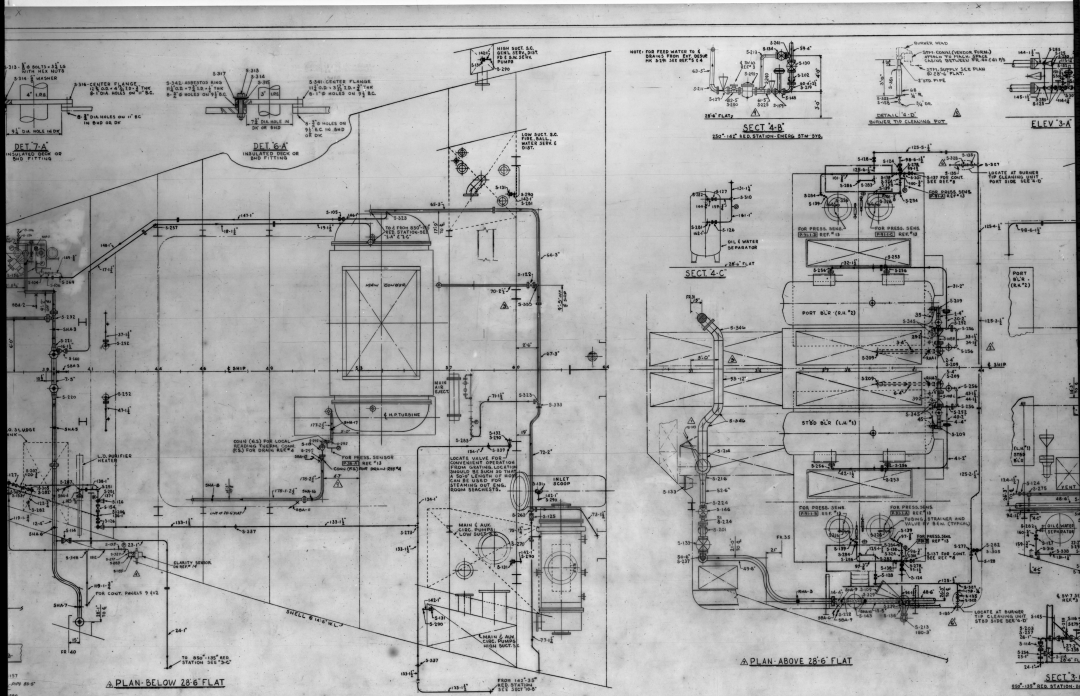


F 2

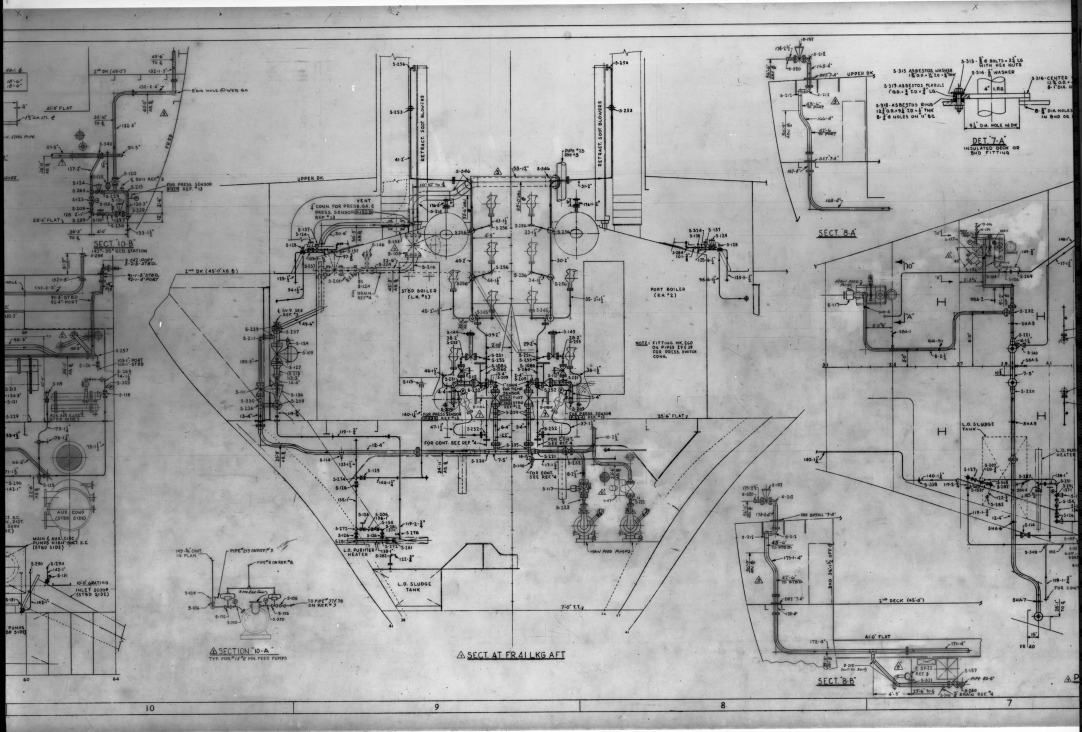
M-4639-371-of-3
ALT.-
M-429

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X


PLAN ABOVE 76'-6" FLAT
ELEV. 5-A
SECT. 3-B
SECT. 3-C
SECT. 1-A
ELEV. 1-B
SECT. 1-C
L.H. DISTILLER
R.H. DISTILLER
C.O. HEATERS
GENERAL NOTES
1. ALL PIPES TO BE SUPPORTED BY INSTALLED HYDROSTATIC TESTING EQUIPMENT. ADDITIONAL SUPPORTS SHALL BE APPROVED BY REPRESENTATIVES OF INSPECTORS' BOARDS AS REQUIRED.
2. ALL DIMENSIONS FROM MOLDED LINES UNLESS NOTED OTHERWISE.
3. PIPING ON THIS DRAWING DETAILED INSIDE SECTION 24 OF BUILDING 371 AND OUTSIDE TO A POINT 5'-0" BEYOND. LOCATION OF END PRODUCT PIPING AS APPROX. LOCATIONS OF OTHER LINES TO BE DETAILED BY OTHERS. WHERE LINE IS SCHEMATIC & SMALL BE SURE TO CHECK LOCATIONS BEFORE FABRICATING.
4. VALVES SHOWN ON THIS DRAWING TO BE PLACED IN ACCESSIBLE LOCATIONS OR IN A POSITION TO BE EASILY OPERABLE BY INTENDED USER.
ALTERATIONS (CONT'D)
DESCRIPTION
REVISION
REFERENCE PLANS
ALTERATIONS
DESCRIPTION
APPROVAL LETTERS
BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219
AUXILIARY STEAM PIPING
PLAN NO. M-4639-371-69-2
JOB NO. 371
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
M-430
M-4634-371-69-2 Sht. 27 Dist. 9
F 1
8X



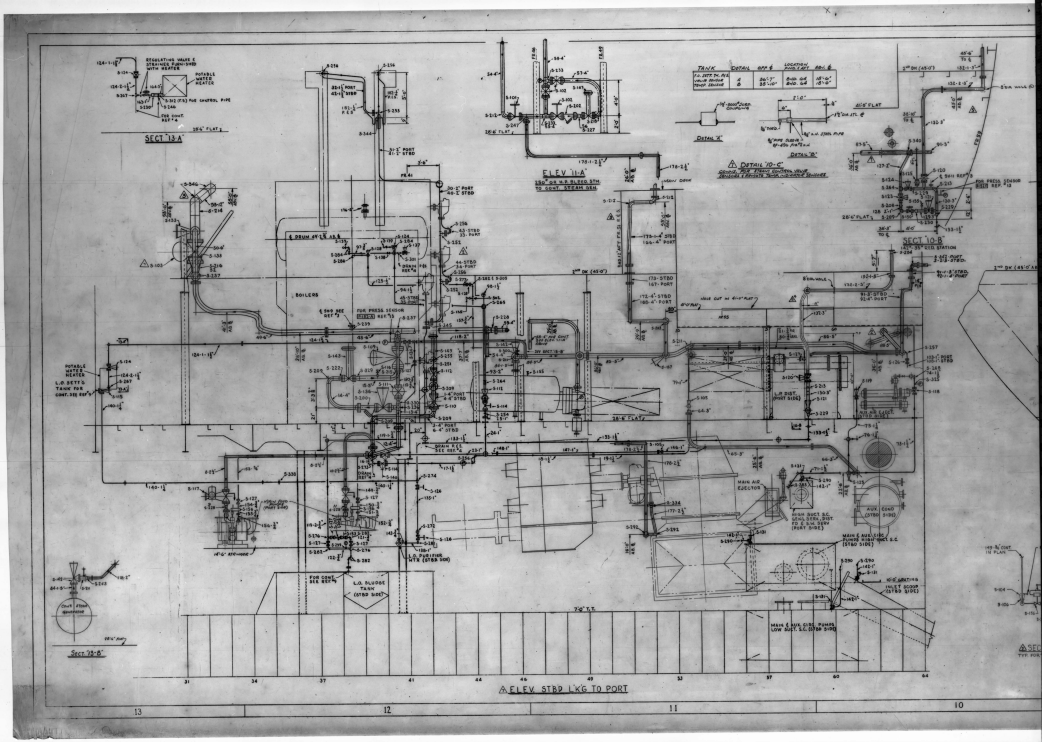
F
2
M-4639-371-09-9
Sk. 27 Alt. 9
M-430
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 3

M-4634-371-04-9
SH. 27 ALT. 9
M-430

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 4

M-4639-371-09-9
Sep 27 Aug 9
M-430

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

REMARKS	REQ.NO.	REQ.NO.
STELL. SEAT & DISC INTEGRAL SEAT	39220	
	39018	
	39220	
	39220-D	
	39220	
	39220	
	39220	
	39220-A	
	39220	
	39220-A	
	39220	
	39220-A	
	39220	
STELL. SEAT & DISC INTEGRAL SEAT		
	39220-A	
	39220	
	39220-A	
	39220	
142# STM TO POT WTR HTR (2); SETT. TANK (1); 150# STM TO T.G. GLAND SEAL (1)		
150# STM TO L.P. DIST (2); SEAL STM TO FD PUMPS (2)	39220-C	
	39220	
MONEL TYPE K OR H SEATS-MANG BRZ STEMS		
	(2) 39220 (4) 39220-F	
STELL. SEAT & DISC INTEGRAL SEAT	22-39220-E 39220-A	
	39220-C	
	39220	
ORDERED AS 0-47 ON REQN. 39280	39280	
	(2) 39220-A (2) 39220-A-IX	
	39220-A	
	39220	
	39018	
FURNISHED WITH CONT. STM GEN.	—	
	39018	
FURN. WITH BOILERS	—	
	39018	
	39016-D	
FURNISHED BY GEN'L ELECT CO.	—	
	39016	
STM GEN (1), 142# RED. STATION (1); SHORE STM BLEED (2)	39220-D (12) 39220 (10)	
	39220-B	
	39220	
	22-39220-E	
(HULL 4640 ONLY)	22-39220-H	

INST. TEST		REQ. NO.
497#		39104-P-1X
1418#		
SERVICE		39-371-09-10-603
390#		39104-P-1X
SERV.		—
		39-371-09-10-603

PIPE LIST

ALT NO.	PIPE NO.	SIZE	SCH NO.	MATERIAL	A.S.T.M. SPEC.	LENGTH	WORK PRESS.	SERVICE	CLASS PIPE	MAX. TEMP.	INST. TEST	REQ.NO.	REQ.NO.
	1 to 3	4"	80	SEAM. ST'L	A-53 Gr.B	15'-0"	850#	DESUP. STM FROM PORT BOILER TO SYSTEM	I	578°F	1418#	39104-M	
	4 to 6	4"	80	SEAM. ST'L	A-53 Gr.B	15'-0"	850#	DESUP. STM FROM STBD BOILER TO SYSTEM	I				
	7	5"	80	SEAM. ST'L	A-53 Gr.B	20'-0"	850#	COMBINED LINES FROM BOILERS TO SYSTEM	I				
	8 to 11	2½"	80	SEAM. ST'L	A-53 Gr.B	60'-0"	850#	DESUP. STM TO MAIN FEED PUMPS	I				
	12 to 14	4"	80	SEAM. ST'L	A-53 Gr.B	20'-0"	850#	DESUP. STM TO 250# RED. STATION	I				
	15	5"	80	SEAM. ST'L	A-53 Gr.B	–	850#	850#-250# RED. STATION	I				
	16 to 20	1½"	80	SEAM. ST'L	A-53 Gr.B	60'-0"	850#	DESUP. STM TO 150# RED. STATION	I				
	22	2½"	80	SEAM. ST'L	A-53 Gr.B	–	150#	850#-150# RED. STATION	I				
	23 to 26	1"	80	SEAM. ST'L	A-53 Gr.B	40'-0"	850#	DESUP. STM TO 135# RED. STATION	I				
	27	2"	80	SEAM. ST'L	A-53 Gr.B	–	135#	850#-135# RED. STATION	I				
	28 to 31	2"	80	SEAM. ST'L	A-53 Gr.B	60'-0"	850#	DESUP. STM TO PORT BOILER SOOT BLOWERS	I				
	32 to 37	1½"	80	SEAM. ST'L	A-53 Gr.B	40'-0"	850#	DESUP. STM TO PORT BOILER SOOT BLOWERS	I				
	38 to 41	2"	80	SEAM. ST'L	A-53 Gr.B	60'-0"	850#	DESUP. STM TO STBD BOILER SOOT BLOWERS	I				
	42 to 47	1½"	80	SEAM. ST'L	A-53 Gr.B	40'-0"	850#	DESUP. STM TO STBD BOILER SOOT BLOWERS	I				
	48	6"	40	SEAM. ST'L	A-53 Gr.B	25'-0"	250#	STEAM TO AUXILIARIES	I	450°F	390#		
	49 to 51	6"	40	SEAM. ST'L	A-53 Gr.B	30'-0"	250#	250#-29# RED. STATION	I				
	52	6"	40	SEAM. ST'L	A-53 Gr.B	5'-0"	29#	250#-29# RED. STATION	I				
	53	12"	STD WT	STEEL	A-53 Gr.A E.R.W.	20'-0"	29#	STEAM FOR AUX. EXH. MAKE-UP	II	390°F	SERV.	PIPE SHT. 39-371-09-10-603	
	54	4"	40	SEAM. ST'L	A-53 Gr.B	20'-0"	250#	STEAM TO CONT. STM GEN.	I	450°F	390#	39104-M	
	55 to 58	4"	40	SEAM. ST'L	A-53 Gr.B	40'-0"	250#	250# OR H.P. BLEEDER STM TO CONT. STM GEN.	I	722°F	497#		
	59	4"	40	SEAM. ST'L	A-53 Gr.B	15'-0"	250#	STEAM TO 142# RED. STATION	I	450°F	390#		
	60	2½"	40	SEAM. ST'L	A-53 Gr.B	5'-0"	250#	250#-142# RED. STATION	I	450°F	390#		
	61 to 63	5"	40	STEEL	A-53 Gr.A E.R.W.	30'-0"	142#	EMERGENCY STM TO SYSTEM	II	405°F	SERV.	39-371-09-10-603	
	64 to 67	8"	40	SEAM. ST'L	A-53 Gr.B	60'-0"	150#	STEAM TO 150# SYSTEM	I	422°F	240#	39104-M	
5	68	4"	40			4'-0"	–	BURNER CLEANING POT	II				
	70	2½"	40	SEAM. ST'L	A-53 Gr.B	20'-0"	150#	STEAM TO MAIN TURBINE GLAND SEAL REGULATOR	I			39104-M	
	71	1½"	40	SEAM. ST'L	A-53 Gr.B	15'-0"	150#	STEAM TO MAIN AIR EJECTOR.	I				
	72	2"	40	SEAM. ST'L	A-53 Gr.B	20'-0"	150#	STEAM TO AUX. AIR EJECTOR & TURBO-GEN. GLAND SEAL	I				
	73 to 74	1½"	40	SEAM. ST'L	A-53 Gr.B	20'-0"	150#	STEAM TO AUX. AIR EJECTOR	I				
	75 to 78	1¼"	40	SEAM. ST'L	A-53 Gr.B	30'-0"	150#	STEAM TO TURBO-GEN. GLAND SEAL	I				
2	79	1"	40	SEAM. ST'L	A-53 Gr.B	20'-0"	150#	STEAM TO L.P. DIST. AIR EJECTORS	I				
	80 to 81	¾"	80	SEAM. ST'L	A-53 Gr.B	30'-0"	150#	STEAM TO L.P. DIST. AIR EJECTORS	I				
	82 to 83	½"	80	SEAM. ST'L	A-53 Gr.B	5'-0"	150#	STEAM TO L.P. DIST. AIR EJECTORS	I				
	84 to 90	5"	40	STEEL	A-53 Gr.A ERW	140'-0"	142#	STEAM FROM CONT. STM GEN. TO SYSTEM	II	405°F	SERV.	39-371-09-10-603	
	91 to 91-1	3"	40	STEEL	A-53 O.H.F.W.	20'-0"	142#	STEAM TO F.O. TANKS HEATING COILS - STBD SIDE	II				
	92 to 92-1	4"	40	STEEL	A-53 O.H.F.W.	20'-0"	142#	STEAM TO F.O. TANKS HEATING COILS - PORT SIDE	II				
	93	2"	40	STEEL	A-53 O.H.F.W.	10'-0"	135#	STEAM TO BOILER BURNERS	II	360°F			
	94 to 95	1½"	40	STEEL	A-53 O.H.F.W.	20'-0"	135#	STEAM TO STBD BOILER BURNERS	II				
	96	¾"	80	STEEL	A-53 O.H.F.W.	–	135#	COMP. AIR CONN. AT STBD BOILER BURNERS	II				
	97	⅜"	80	STEEL	A-53 O.H.F.W.	10'-0"	135#	STEAM TO STBD BOILER BURNERS	II				
	98 to 99	1½"	40	STEEL	A-53 O.H.F.W.	80'-0"	135#	STEAM TO PORT BOILER BURNERS	II				
	100	¾"	80	STEEL	A-53 O.H.F.W.	–	135#	COMP. AIR CONN. AT PORT BOILER BURNERS	II				
	101	⅜"	80	STEEL	A-53 O.H.F.W.	10'-0"	135#	STEAM TO PORT BOILER BURNERS	II				
	103 to 106	1"	40	STEEL	A-53 O.H.F.W.	20'-0"	142#	STEAM TO PORT F.O. SETT. TK HEATING COIL	II	405°F			
	108 to 111	1"	40	STEEL	A-53 O.H.F.W.	20'-0"	142#	STEAM TO STBD F.O. SETT TK HEATING COIL	II				
	112 to 115	1¼"	40	STEEL	A-53 O.H.F.W.	40'-0"	142#	STEAM TO F.O. HEATERS	II				
	118	2"	40	STEEL	A-53 O.H.F.W.	20'-0"	142#	STEAM TO SLUDGE TK. & AFT POT. WATER HEATER	II				
	119 to 122	¾"	80	STEEL	A-53 O.H.F.W.	60'-0"	142#	STEAM TO SLUDGE TK.	II				
	124 to 124-2	1½"	40	STEEL	A-53 O.H.F.W.	60'-0"	142#	STEAM TO AFT POT. WATER HEATER	II				
	125 to 125-6	½"	80	STEEL	A-53 O.H.F.W.	80'-0"	142#	STEAM SMOTH. TO BOILER WINDBOXES	II				
	127 to 128	2"	40	STEEL	A-53 O.H.F.W.	20'-0"	142#	STEAM TO 35# RED. STATION.	II				
	129	3"	40	STEEL	A-53 O.H.F.W.	–	35#	142#-35# RED. STATION	II	281°F			
	130	3"	40	STEEL	A-53 O.H.F.W.	–	35#	142#-35# RED. STATION	II				
	131	1¼"	40	STEEL	A-53 O.H.F.W.	60'-0"	35#	STEAM TO OIL & WATER SEPARATOR	II				
	132 to 132-2	3"	40	STEEL	A-53 O.H.F.W.	40'-0"	35#	STEAM TO HEATING SYS.	II				
	133	1½"	40	STEEL	A-53 O.H.F.W.	80'-0"	35#	STEAM FOR SEACHESTS, L.O. PURIFIER HTR & L.O. SETT. TK HTG COIL	II				
	134	1"	40	STEEL	A-53 O.H.F.W.	40'-0"	35#	STEAM FOR SEACHESTS	II				
	135 to 138	1"	40	STEEL	A-53 O.H.F.W.	20'-0"	35#	STEAM TO L.O. PURIFIER HTR	II				
	140	1¼"	40	STEEL	A-53 O.H.F.W.	60'-0"	35#	STEAM TO L.O. SETT. TK HTG COIL	II				
	142	1"	40	STEEL	A-53 O.H.F.W.	–	–	STEAM OR AIR AT SEACHESTS	II				
	143	¾"	80	STEEL	A-53 O.H.F.W.	–	35#	STEAM TO L.O. PURIFIER HTR	II				
	144 to 145	1½"	40	STEEL	A-53 O.H.F.W.	–	142#	STEAM TO F.O. HEATERS	II	405°F	SERV.		
	146 to 148	1"	40	SEAM. STL	A-53 Gr.B	40'-0"	150#	GLAND SEAL STEAM TO MAIN FEED PUMPS	I	422°F	240#	39104-M	
	149 to 156	¾"	80	SEAM. STL	A-53 Gr.B	40'-0"	150#	GLAND SEAL. STEAM TO MAIN FEED PUMPS	I	422°F	240#		
	157	¾"	80	STEEL	A-53 O.H.F.W.	20'-0"	142#	STEAM TO BURNER TIP TABLE & BOILER WINDBOXES	II	405°F	SERV.	39-371-09-10-603	
	158	⅜"	80	STEEL	A-53 O.H.F.W.	5'-0"	142#	F.O. HTRS TEMP. CONTROL STATION	II	405°F	SERV.		
	159 to 160	¾"	80	STEEL	A-53 O.H.F.W.	5'-0"	35#	STEAM TO OIL & WATER SEPARATOR	II	281°F	SERV.		
	161 to 162	1"	40	STEEL	A-53 O.H.F.W.	5'-0"	35#	STEAM TO OIL & WATER SEPARATOR	II	281°F	SERV.		
	163	1"	40	STEEL	A-53 O.H.F.W.	1'-0"	142#	STEAM TO AFT POT. WATER HEATER	II	405°F	SERV.		
	164	3"	40	STEEL	A-53 O.H.F.W.	2'-0"	142#	STEAM TO AFT POT. WATER HEATER	II	405°F	SERV.		
	165 to 173-2	4"	40	STEEL	A-53 O.H.F.W.	140'-0"	142#	SHORE STEAM	II	405°F	SERV.		
	174 to 175	2½"	40	STEEL	A-53 O.H.F.W.	2'-0"	142#	SHORE STEAM	II	405°F	SERV.		
	176 to 176-1	2"	80	SEAM ST'L.	A-53 GR.B	2'-0"	940#	SAFETY VALVE	I	538°F	1523#	REVISED BY PIPE SHOP	

GENERAL NOTES

1. ALL MATERIAL TO BE MANUFACTURERS STD. AS LISTED OR EQUAL.
2. ALL MATERIAL TO MEET REQUIREMENTS OF U.S. COAST GUARD & AMERICAN BUREAU OF SHIPPING.
3. ALL FLANGED VALVES & FITTINGS TO BE FACED & DRILLED UNLESS NOTED OTHERWISE.
4. ONE END OF STUD TO BE STAMPED WITH MK "B-7" & OTHER END WITH VENDORS SYMBOL.
5. RAISED FACE OR FLAT FACE FLANGES IN 150# OR 300# STDS CAN BE APPLIED.

SUPPLY SHT. 39-89-1297
UAO-39131

NO.	PLAN NO.	TITLE
2	M-4639-371-09-11	DETAIL OF AUX. STM PIPES
1	M-4639-371-09-09	AUX. STM PIPING

REFERENCE PLANS

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	4/21/71		THIS PLAN IS A DUPLICATE OF PLAN NO. M-4622-371-09-10 REV. 6 PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS: REVISED TO SUIT ALT. 1 ON REF. #1; STEEL & FLGS CHANGED TO COMM'L TYPE FLGS; ADDED GEN. NOTE #5.	J.K.	G.G. SHARP LETTER DATED 5-27-71
2	6/7/71		1. PIPE LIST: REVISED SIZE & SCH. NO. OF PIPE 79 2. FITTING LIST: CHGD QUANT. OF S-252, S-256 & ADDED S-345. 3. FLG LIST: CHGD QUANT. OF ITEMS 9 & 10. 4. STUD & GASKET LIST: CHGD QUANT. OF ITEMS 57 & 58. ALL ABOVE FOR ALT. 2 ON REF. #1	J.K.	G.G. SHARP LETTER DATED 7-26-71
3	11/9/71		FITTING LIST: 1. DECR. SIZE OF S-321 FROM 5"x2½" TO 4"x2½". 2. REVISED S-217 FROM SCH. 40 TO SCH. 80 3. INCR. AMT. OF S-292 FROM 3 TO 4 & S-334 FROM 1 TO 2. 4. ADDED S-346 & S-347 FLANGE LIST: 1. INCR. AMT. OF ITEM NO. 16 FROM 7 TO 9 2. ADDED ITEM No. 28	P.M.N.	W.W.R. 11/11/71
4	12/8/71		1. PIPE LIST: ADDED PIPE No. 182. 2. FITTING LIST: QTY. FOR S-277 WAS 1, S-283 WAS 5, S-327 WAS 2. ADDED S-348, S-349 & S-350. 3. VALVE LIST: QTY. FOR S-155 WAS 5. ADDED: S-104, S-106 & S-156 WAS 2.	D.H.	W.W.R. 12/15/71
5	5/15/72		INCREASED FLG ITEM 32 FROM 18 TO 20 ADDED PIPE No. 68 ADDED VALVE S-158 ADDED FITT. S-351 & S-352 REVISED PRESS. OF S-149 FROM 1500# TO 600#, DECREASED FLG. ITEM #9 FROM 29 TO 25 & ADDED FLG ITEM #35, ADDED GASKET & STUD ITEM #46; TO SUIT VENDOR FURN. VALVE.	R.W.F.	5-22-72
6	8/14/72		1. VALVE LIST: INCR. QUANTITY OF VALVE S-133 FROM 3 TO 5 REVISION MADE TO COINCIDE WITH ALT. 6 ON REF. No. 1	P.M.N.	8-30-72
7	4/2/73		ADDED VALVE S-159 TO SUIT REV. 9 OF REF. 1. (HULL 4640 ONLY)	G.R.E.	
8	6/25/73		REVISED VALVE LIST AS FOLLOWS: 1) CORRECTED DESCRIPTION OF S-150. 2) REVISED SIZE OF S-151 FROM 1/2" TO 1". THE ABOVE REVISION WAS MADE TO AGREE WITH VALVE PROCUREMENT SPEC. AND REVISED DIAGRAM.	J.E.H.	

HULL	DESIGN	CHARGE
4640	34,700 DWT CONTAINERSHIP	10-4640
4639	34,700 DWT CONTAINERSHIP	10-4639

JOB NO. 371

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ~ DATE 4-21-71
DRAWN C/B R.A. NOWAK APPROVED
TRACED APPROVED
CHECKED J.E.H. APPROVED [illegible]

PLAN NO. M-4639-371-09-10 ALT. NO. 8

PIPE & MAT'L LISTS
AUX. STEAM PIPING

APPROVAL LETTERS					
HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-27-71				
A.B.S.	X				
U.S.C.G.	5-18-71				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

DATE OF ISSUE

	DATE OF ISSUE
ALTERATION	1 2 3 4 5 6 7 8
ENGINEERING DISTRIBUTION	4-26-71, 6-22-71, 9-11-71, 11-19-71, 12-22-71, 6-14-72, 8-31-72, 4-5-73, 6-27-73
TOTAL ENG'R DIST.	15 9 5 11 9 7 7 11 9
TOTAL YARD DIST.	23 23 23 21 21 11

M-431

30.63 SQ.FT.

F 1

M-4639-371-09-10 Sys. 27 Alt. 8

M-431

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

…CE. (SERVICE, cut off)	REMARKS	REQ. NO.	REQ. NO.
58, 111, 135			39381-B
			39-84-1297
			39381-B
			39-84-1297
62, 106			
7, 160			
5, 19			39381-B
			39381-B
G STM SYS.			39001
			39-84-1297
			* UAO
, 85, 87, 90			
, 172, 173-1, 173-2			
0, 132-1			
			39382-B
			UAO
22			39382-B
50			39381-B
57			
			39381-B
			39-84-1297
			39381-B

…(SERVICE, cut off)	CAT. OR DWG. NO.	REQ. NO.
	TUBE TURN #34	39383-G
	TUBE TURN #35	(4)39383-G (8)39383-B
	TUBE TURN #35	39383-B
	TUBE TURN #31	39383-B
		(4)39383-G (8)39383-B
1, 35, 45	TUBE TURN #1558	39383-B
43, 44, 46, 47, 19, 20		(4)39383-G (16)39383-B
		(12)39383-G (14)39383-B
		39383-B
	TUBE TURN #151	39383-G
	TUBE TURN #31	
	TUBE TURN #150	39383-B
3 98-4 98-5 98-6 99 118		39383-B
3 134 135 136 137 138 142(5)		
153 154 155 156 119-1 119-2		
		39383-G
	TUBE TURN #54	
	TUBE TURN #54	
	TUBE TURN #51	39383-B
		39383-B
	TUBE TURN #50	39383-B
	TUBE TURN #50	

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FITTING LIST

ALT NO.	FITTING NO.	AMT	SIZE	MATERIAL	A.S.T.M. SPEC.	DESCRIPTION	CAT. OR DWG NO.	SERVICE	REMARKS	REQ. NO.	REQ. NO.
	S-200	1	4"	CAST ST'L	A-216 WCB	900# FLGD "Y" STRAINER, F&D.	LESLIE FIG. 7211	850#-250# RED. STATION	BORE BLOWDOWN BLANK FOR 1" SCH. 80 SOCK. WELD.	393811-C	
	S-201	1	6"			300#	LESLIE 7203	250#-29# RED. STATION			
	S-202	2	4"			300#		250#-142# RED. STATION(1) STM TO CONT. STM GEN.(1)			
	S-203	1	1"	FORG. ST'L	A-105 Gr II	1500# SOCK. WELD. "Y" STRAINER BORE SCH. 80	7615	850#-135# RED. STATION(1)	BORE BLOW DOWN BLANK FOR 1/2" SCH. 80 SOCK. WELD.		
	S-204	1	1 1/2"	CAST ST'L	A-216 WCB	1500# BORE SCH. 80	7215	850#-150# RED. STATION	BORE BLOW DOWN FOR 1/2" SCH. 80 PIPE		
	S-205	3	1 1/4"			600#	7209	142# STM TO F.O. HTRS (1) T.G. 150# GLAND SEAL (2)	SCH. 40 BORE		
	S-206	3	1"					STM TO F.O. HTG COILS (2) STM TO L.O. PUR. HTR. (1)			
	S-207	1	3/4"					142# STM TO SLUDGE TK.	SCH. 80 BORE		
	S-208	1	2"					142#-35# RED. STATION	SCH. 40 BORE		
	S-209	12	4"	SEAM. STL	A-234 WPB	SCH. 80 L.R. 90° WELDELL	TUBE TURN. #2	1, 2, 3, 4, 5, 6, 13, 14		39380-H	
	S-210	1	3"×2 1/2"			SCH. 80 L.R. 90° RED. WELDELL	#2-R	22			
	S-211	3	5"			SCH. 40 L.R. 90° WELDELL	#1	63, 84, 85			
	S-212	8	4"					54, 59, 165, 166, 173-1, 173-2			
	S-213	5	3"					130, 61, 64, 91-1, 180			
	S-214	1	12"			SCH. 40 L.R. 90° WELDELL	#1	53, 53			
	S-215	1	6"×5"			SCH. 80 L.R. 90° RED. WELDELL	#2-R	15			
	S-216	1	12"×6"			STD WT. L.R. 90° RED. WELDELL	#1-R	52			
△3	S-217	1	1 1/2"			SCH. 80 WELDELL	#1	20		39380-B	
	S-218	1	4"×3 1/2"			SCH. 40 RED. WELDELL	#1-R	57		39380-H	
	S-219	1	4"×2 1/2"					60			
	S-220	1	5"×4"			SCH. 80 CONC. WELD. REDUCER	#91	7		39380-H	
	S-221	1	5"×2 1/2"					7			
	S-222	1	4"×2"					14			
	S-223	2	2 1/2"×2"					9, 11			
	S-224	2	6"×3"			SCH. 40 CONC. WELD. REDUCER	#90	51 52			
	S-225	1	5"×2 1/2"					61			
	S-226	1	5"×4"					90			
	S-227	1	4"×3 1/2"					56			
	S-228	1	6"×4"					48			
	S-229	2	3"×1 1/2"					130			
	S-230	2	3"×1"	FORG. STEEL	A-105 Gr II	SCH. 40 SOCK. WELD. REDUCER	H. K. PORTER #1180	129, 163		39381-B	
	S-231	2	4"×4"×2"	SEAM. STL	A-234 WPB	SCH. 80 WELD. TEE	TUBE TURN #23	1, 4		39380-H	
	S-232	1	2 1/2"			SCH. 80 WELD. TEE	#21	7			
	S-233	2	4"			SCH. 40 WELD. TEE	#20	55, 58			
	S-234	1.	3"×2 1/2"	SEAM STL	A-234 WPB	SCH. 40 CONC. WELD. REDUCER	TUBE TURN #90	132-1			
	S-235	2	5"×4"	FORG. ST'L	A-105 Gr II	SCH. 80 WELDOLET I.P.S. RUN & OUTLET	BONNEY FORGE	7		39382-B	
	S-236	1	4"	SEAM. STL	A-234 WPB	SCH. 80 WELDTEE	TUBE TURN #23	13		39380-H	
	S-237	2	6"	SEAM. STL	A-234 WPB	SCH. 40 WELD. TEE	TUBE TURN #20	48, 50			
	S-238	1	6"×4"	FORG. STL	A-105 Gr II	WELDOLET I.P.S. RUN & OUTLET	BONNEY FORGE	48		39382-B	
	S-239	2	6"×3"					48			
	S-240	1	5"×3"					61			
	S-241	1	4"×3"					59			
	S-242	2	5"	SEAM. STEEL	A234 GR. WPB	SCH. 40 WELD. TEE	TUBE TURN #20	84, 87		39380-H.	
	S-243	2	5"×2"	FORG. STEEL	A105 GR. 2	SOCKOLET I.P.S. RUN & OUTLET	BONNEY FORGE	84, 87		39382-B	
	S-244	1	5"×1 1/4"					90			
	S-245	2	5"×1"					87, 90			
	S-246	2	8"×3/4"			SCH. 80 SOCKOLET		62, 164.			
	S-247	1	4"×2 1/2"			SCH. 40 WELDOLET		55			
	S-248	1	5"×3/4"			3000# THREDOLET		62			
	S-249	1	36"×3/4"			3000# THREDOLET		84			
	S-250	2	5"×4"			SCH. 40 WELDOLET		62, 85		39382-B	
	S-251	2	2"			SCH. 80 SOCK. WELD. TEE	H.K. PORTER #580	29, 39		SUB. SHT. 39-84-1297	
△2	S-252	8	2"×2"×1 1/2"					29, 30, 39, 40		39381-B	
	S-253	2	2"×1 1/2"×1 1/2"					31, 41			
	S-254	1	1"					25		39-84-1297	
	S-255	4	2"			SCH. 80 SOCK. WELD. 90° ELL	#480	28, 29, 38, 39		39-84-1297	
△2	S-256	14	1 1/2"					31, 32, 41, 42, 43, 44, 18, 33, 34			
	S-257	3	1"					26, 87, 90			
	S-258	1	2"×1"			SCH. 80 SOCK. WELD REDUCER	#1180	27		39381-B	
	S-259	1	1/2"			WELD. BOSS FIG. 8 EF-358		27		UAO	
	S-260	2	1/4"			SCRD. BOSS FIG. 9 EF-358		29, 39		UAO	
	S-261	1	1 1/2"			SCH. 80 SOCK. WELD. TEE	H.K. PORTER #580	19		39-84-1297	
	S-262	1	2"×1"×2"					93		39381-B	
	S-263	1	2"×1 1/4"×1 1/2"					72			
	S-264	2	2"×2"×1 1/2"					93, 127			
	S-265	1	2"×1 1/2"×1 1/2"					93			
	S-266	3	1 1/2"×1 1/2"×3/4"					67			
	S-267	1	1 1/2"×1"×1"					124-2			
	S-268	1	1 1/2"×1"			90° ELBOW	#480	74		39381-B	
	S-269	2	1"×3/4"×3/4"			TEE	#580	79, 148			
	S-270	4	1 1/4"					1121, 115, 75		39-84-1297	
	S-271	1	1 1/4"×1 1/4"×1 1/4"					115		39381-B	

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VALVE LIST

ALT NO.	VALVE NO.	AMT	SIZE	MATERIAL	A.S.T.M. SPEC.	DESCRIPTION	CAT. OR DWG NO.	SERVICE	REMARKS	REQ. NO.	REQ. NO.
	S-101	1	4"	C.S.S.S. TRIM	A-216 WCB	300# FLGD GLOBE STOP CK NON-CHATTER TYPE	EDWARDS #302	250# STM TO CONT. STEAM GEN.	STELL. SEAT & DISC INTEGRAL SEAT	39220	
	S-102	3	4"	C.S.S.S. TRIM	A-216 WCB	300# FLGD GLOBE	EDWARDS #318	250# STM TO CONT. STEAM GEN.			
	S-103	1	12"	C.S.S.S. TRIM	A-216 WCB	300# FLGD GLOBE	EDWARDS #318	250-29# RED. STATION			
△4	S-104	2	1/2"	BRZ.	B-61	150# SCRD CONTROL VALVE	LESLIE LXY	STM. SEALING TO MN. FD PMPS.		39018	
	S-105	2	1"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	150# STM TO L.P. DIST.(1) GLAND SEAL TO MAIN FD PUMPS(1)		39220	
△4	S-106	4	3/4"	F.S.S.S TRIM.	A-105 GR II	600# S.W. GLOBE - BOLTED BONNETS	EDWARDS #848-Y	STM. SEALING TO MN. FD. PMPS		39220-D	
	S-108R	1	4"	CR MO S.S. TRIM	A-217 WC6	900# FLGD GLOBE STOP CK SLEEVE GUIDED NON-CHATTER BEVEL GEAR & 1" BY-PASS ON RIGHT HD SIDE FACING OUTLET	EDWARDS #4006	DESUP. STM FROM BOILER		39220	
	S-108L	1	4"	CR MO S.S. TRIM	A-217 WC6	900# FLGD GLOBE STOP CK SLEEVE GUIDED NON CHATTER BEVEL GEAR & 1" BY-PASS ON LEFT HD SIDE FACING OUTLET	EDWARDS #4006	DESUP. STM FROM BOILER		39220	
	S-109	1	6"	CR MO S.S. TRIM	A-217 WC6	900# FLGD GLOBE, F&D.	EDWARDS #4016	850#-250# RED. STATION		39220	
	S-110R	1	4"	CR MO S.S. TRIM	A-217 WC6	900# FLGD GLOBE 1" BY-PASS ON RIGHT HAND SIDE FACING INLET	EDWARDS #4016	DESUP. STM FROM BOILER			
	S-110L	1	4"	CR MO S.S. TRIM	A-217 WC6	900# FLGD GLOBE 1" BY-PASS ON LEFT HAND SIDE FACING INLET	EDWARDS #4016	DESUP. STM FROM BOILER			
	S-111	2	3"	CR MO S.S. TRIM	A-217 WC6	900# FLGD GLOBE	EDWARDS #4016	850#-250# RED. STATION (1) 850#-150# RED. STATION (1)		39220-A	
	S-112	3	2"	FORG. CR MO S.S. TRIM	A-182 F-11	1500# FLGD GLOBE	EDWARDS #1028	850#-135# RED. STATION (1) 800# STM TO S.B.S. (2)		39220	
	S-113	1	2 1/2"	C.S.S.S. TRIM	A-216 WCB	300# FLGD. GLOBE STOP CHECK-MOTOR OPERATED	EDWARDS #302	256# BLEEDER STEAM TO CONT. STEAM GEN.		39220-A	
	S-114	3	1"	FORG. CR MO S.S. TRIM	A-182 F-11	1500# FLGD GLOBE	EDWARDS #1028	850#-135# RED. STAT.(3)		39220	
	S-115	1	1 1/2"	C.S.S.S. TRIM	A-216 WCB	150# FLGD. ANGLE	POWELL #1533 F.E	35# STEAM TO L.O. SETTLING TANK		39220-A	
	S-116	3	1/2"	FORG. CR MO S.S. TRIM	A-182 F-11	1500# SOCK. WELD. GLOBE	EDWARDS #1048-Y	PRESS. CONT. CONN. FOR 250#, 150# & 135# RED. STAT.		39220	
	S-117	2	2 1/2"	CR MO S.S. TRIM	A-217 WC6	1500# FLGD GLOBE ELECT. MOTOR OPERATOR	EDWARDS #7516 MOD.	DESUP. STM TO MAIN FEED PUMPS	STELL. SEAT & DISC INTEGRAL SEAT		
	S-118	1	1 1/2"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	150# STEAM TO AUX. AIR EJECTOR			
	S-119	2	1 1/4"	C.S.S.S. TRIM	A-216 WCB	150# FLGD. ANGLE	POWELL #1533 F.E.	150# STM. TO TURBO-GEN. GLAND SEAL		39220-A	
	S-120	1	3"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	35# STM HEATING SYS.		39220	
	S-121	1	3"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	142#-35# RED. STATION			
	S-122	1	2 1/2"	C.S.S.S. TRIM	A-216 WCB	150# FLGD. GLOBE	POWELL #1531 F.E.	150# STEAM TO GLAND SEAL REG. VALVE		39220-A	
	S-123	1	2"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	142#-35# RED. STATION		39220	
	S-124	5	1 1/2"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	142#-35# RED. STAT.(1) 135# STM TO B'L'R BURNERS(2)	142# STM TO POT WTR HT'R(2)		
	S-125	9	1 1/4"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	142# STM. TO F.O. HTR.(4); 35# STM. TO OIL & WTR. SEP.(1); L.O. SETT. TANK(1); 150# STM. TO T.G. GLAND SEAL(1)			
	S-126	12	1"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	142# STM TO F.O. SETT. TKS.(8); STM. TO L.O. PUR. HTR.(4)			
	S-127	10	3/4"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	PACIFIC, FIG# 3160	142# STM TO SLUDGE TK(4) 35# STM. TO OIL & WTR. SEP. (2)	150# STM TO L.P. DIST(2) SEAL STM TO FD PUMPS(2)	39220-C	
	S-128	3	1/2"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	PACIFIC, FIG# 3160	142# STM SMOTH. TO BOILER WINDBOXES			
	S-129	1	5"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE STOP CK NON-CHATTER TYPE	POWELL #1576	142# EMERG. STM TO SYS.		39220	
	S-130	1	4"	C.S.S.S. TRIM	A-216 WCB	300# FLGD GLOBE	EDWARDS #318	250#-142# RED. STATION			
	S-131	5	1"	BRONZE MONEL TRIM	B-61	150# FLGD ANGLE FLAT FACE	POWELL #105	STM OR AIR AT SEACHESTS	MONEL TYPE K OR H SEATS-MANG. BI-BRZ STEMS		
	S-132	1	1"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE	POWELL #1531 F.E.	35# STM TO SEACHESTS			
	S-133	2	6"	C.S.S.S. TRIM	A-216 WCB	300# FLGD GLOBE	EDWARDS #318	250#-29# RED. STATION			
	S-134	1	3"	C.S.S.S. TRIM	A-216 WCB	300# FLGD GLOBE	EDWARDS #318	250#-142# RED. STATION			
△6	S-135	5	1/4"	F.S.S.S. TRIM	A-105 Gr II	600# SOCK. WELD. GLOBE	EDWARDS #848-Y	BOILER STM. SMOTH. TEST (1) BURNER TIP BENCH (2)		(1)39220 (4)39220-F	
	S-136	1.	4"	CR MO S.S. TRIM	A-217 WC6	900# FLGD GLOBE WITH 1" BY-PASS	EDWARDS #4016	850#-250# RED. STATION	STELL. SEAT & DISC INTEGRAL SEAT	22-39220-E 39220-A	
	S-137	2	3/4"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE STOP-CHECK	PACIFIC, FIG# 3160 MOD	COMP. AIR CONN. FOR BOILER BURNERS		39220-C	
	S-138	5	3/8"	F.S.S.S. TRIM	A-105 Gr II	600# SCRD. GLOBE	EDWARDS #848	135# STM. TO BLR. BURN.(4) F.O. HTRS. CONTROL PIPE (1)		39220	
	S-139	4	3/8"	F.S.S.S. TRIM	A-105 Gr II	600# SCRD HORIZ. CHECK	EDWARDS #838	135# STM TO BOILER BURN.	ORDERED AS 0-47 ON REQN. 39280	39280	
	S-140	2	1 1/2"	FORGED CR MO S.S. TRIM	A-182 F-11	1500# FLGD GLOBE	EDWARDS #1028	850#-150# RED. STATION		(1) 39220-A (1) 39220-A-1X	
	S-141	1	1 1/4"	FORGED CR MO S.S. TRIM	A-182 F-11	1500# FLGD GLOBE	EDWARDS #1028	850#-150# RED. STATION		39220-A	
	S-142	1	5"	C.S.S.S. TRIM	A-216 WCB	150# FLGD ANGLE STOP CK NON-CHATTER TYPE	POWELL #1578	142# STM TO SYS. FROM CONT. STM GEN.		39220	
	S-143	1	2"	C.S.S.S. TRIM	A-216 WCB	1500# FLGD DIAPHRAGM CONTROL	LESLIE DDOS	850#-250# RED. STATION		39018	
	S-144	1	1"	C.S.S.S. TRIM	A-216 WCB	1500# FLGD DIAPHRAGM CONTROL	LESLIE DOS	850#-150# RED. STATION			
	S-145	1	1"	C.S.S.S. TRIM	A-216 WCB	1500# FLGD DIAPHRAGM CONTROL	LESLIE DOS	850#-135# RED. STATION			
	S-146	1	3"	C.S.S.S. TRIM	A-216 WCB	300# FLGD DIAPHRAGM CONTROL	LESLIE DBS-2	250#-29# RED. STATION			
	S-147	1	3 1/2"	C.S.S.S. TRIM	A-216 WCB	300# FLGD DIAPHRAGM CONTROL	LESLIE DBS	250# OR H.P. BLDR STM TO CONT. STM GEN.	FURNISHED WITH CONT. STM GEN.	—	
	S-148	1	2 1/2"	C.S.S.S. TRIM	A-216 WCB	300# FLGD DIAPHRAGM CONTROL	LESLIE DLS-1	250#-142# RED. STATION		39018	
△5	S-149	2	2"	C.S.S.S. TRIM	A-216 WCB	600# FLGD DIAPHRAGM CONTROL	FISHER DWG AF6823	STM TO SOOT BLOWERS	FURN. WITH BOILERS	—	
△5	S-150	1	1"	C.S.S.S. TRIM	A-216 WCB	150# FLGD PRESS. REDUCING VALVE	LESLIE GPS	142#-35# RED. STATION		39018	
△5	S-151	2	1"	C.S.S.S. TRIM	A-216 WCB	150# FLGD TEMPERATURE REGULATOR	LESLIE DDOS	PORT & STBD F.O. SETT. TK HEAT. COILS		39016-D	
	S-152	1	1"	C.S.S.S. TRIM	A-216 WCB	300# FLGD TEMPERATURE REGULATOR	FISCHER	F.O. HEATERS	FURNISHED BY GEN'L ELECT. CO.	—	
	S-153	1	1/2"	C.S.S.S. TRIM	A-216 WCB	150# FLGD TEMPERATURE REGULATOR	LESLIE GPS	SLUDE TANK		39016	
	S-154	1	1"	C.S.S.S. TRIM	A-216 WCB	150# FLGD TEMPERATURE REGULATOR	LESLIE GPS	L.O. PURIFIER HTR			
△4	S-155	11	1/2"	F.S.S.S. TRIM	A-105 Gr II	600# SOCK. WELD. GLOBE	EDWARDS #848-Y	PRESS. CONTROL FOR L.P. STM GEN (1), 142# RED STATION (1) 35# RED. STATION (1); SHORE STM BLEED (2)		39220-D (R) 39220 ([illegible])	
△4	S-156	4	3/4"	STEEL	—	AUTOMATIC CONTROL, START UP SETS	WORCESTER SERIES 34	GLAND SEAL STM TO MAIN FEED PUMPS		39220-B	
	S-157	3	4"	C.S.S.S. TRIM	A-216 WCB	150# FLGD GLOBE, F&D, BOLTED BONNETS	POWELL #1531 F.E.	142# SHORE STEAM		39220	
△5	S-158	2	3/4	BRONZE	B-61	150# SCR'D GATE VALVE UNION BONNET	OIC FIG 7150	DRAIN		22-39220-E	
△7	S-159	1	2 1/2"	C.S.S.S. TRIM	A-216 WCB	300# FLGD. GLOBE, F&D. STELLITED SEATS & DISCS-SEATS INTEGRAL OR WELDED-IN	EDWARDS #318	250#-142# RED. STATION	(HULL 4640 ONLY)	22-39220-H	

PIPE LIST (CONT)

ALT	NO.	SIZE	SCH	MATERIAL	A.S.T.M	SERVICE	AMT.	WORK PRESS.	CLASS	MAX. TEMP.	INST. TEST.		REQ. NO.
	177 to 178	2 1/2"	40	SEAM. ST'L	A-53 GR.B	H.P. BLEED. STM	20'-0"	256#	I	722°F	497#		39104-P-1X
	182	1/4"	80	SEAM. STL	A-53 Gr.B	RETRACT. SOOT BLOWER HEAT EQUAL.	40'-0"	850#	I	578°F	1418#		
	179	1/4"	80	STEEL	A-53 OHEW	STM. TO BURNER CLEANING UNIT	40'-0"	142#	II	405°F	SERVICE		39-371-09.10-608
	180	5"	40	SEAM. STEEL	A-53 GR.B	250# RED. STATION BY-PASS	10'-0"	250#	I	450°F	390#		39104-P-1X
	181	1/2"	80	STEEL	A-53 OHFW	SHORE STEAM BLEED CONNS	—	142#	II	405°F	SERV.		—
△4	182	1/2"	80			STM. TO CLARITY SENSOR	45'-0"						39-371-09.10-603

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F

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M-4639-371-09.10
SYS. 27 ALT. 8

M-431

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640

8X

SERVICE	REMARKS	REQ. NO.	REQ. NO.
		39380-H	
		(2) 39380-H (2) 39380-R	
		39382-B	
		39381-B	
		39380-H	
	DET "6-A" REF #1	* UAO	
	DET. "6-A" REF #1	39385-B	
		39380-H	
		UAO	
		39381-B	
		392216-A	
		39380-R	
		39223	
		392214	
		39223	
		22-39222	
		22-39223-A	

FLANGE LIST CONT.

ALT NO	ITEM NO.	AMT	SIZE	TYPE	MATERIAL	A.S.T.M. SPEC.	PRESS STD	SCH. BORE	LOCATION	CAT. OR DWG NO	REQ. NO.
	31	28	4"	SLIP-ON SEE NOTE #5	FORG STL	A-181 Gr I	150#	–	90, 92, 92-1 165, 166, 167, 168, 169, 170, 171, 172, 173, 173-1, 173-2 FLAT FACED	TUBE TURN #50	39383-B
5	32	20	3"	SLIP-ON SEE NOTE #5			150#	–	129, 130, 132, 132-1, 132-2, 64, 65, 66, 67, 87, 91, 91-1	TUBE TURN #50	
	33	1	2 1/2"	SOCK. WELD SEE NOTE #5			150#	40	132-1, 66	TUBE TURN #150	
	34	1	2"	SOCK. WELD. SEE NOTE #5			300#	40	64	TUBE TURN #151	39383-G
5	35	4	2"	SOCK. WELD		A-105 GR II	600#	80	29, 28, 38, 39	TUBE TURN #152	39221
	36	26	1 1/4"	SOCK. WELD SEE NOTE #5	FORG. STL	A-181 Gr I	150#	40	90, 112, 113, 114, 115, 130, 131, 133, 140, 144, 145, 112-1, 72, 75, 76, 77, 78	TUBE TURN #150	39383-B
	37	1	1 1/4"	SOCK. WELD.		A-105 Gr II	1500#	80	19	TUBE TURN #1558	39383-G
	38	1	1 1/4"	SOCK. WELD.		A-105 Gr II	1500#	40	64	TUBE TURN #1558	
	39	22	1/2"	SOCK. WELD SEE NOTE #5		A-181 Gr I	150#	80	157, 125, 104, 105, 109, 110, 120, 121, 125-1, 125-2, 125-3, 125-4, 125-5, 125-6, 76, 78	TUBE TURN #150	39383-B
	40	2	6"×1"	SOCK. WELD RED SEE NOTE #5			150#	40	106, 111		39383-G
	41	1	5"×3/4"				150#	80	122		
	42										
	43	2	1"	SOCK. WELD SEE NOTE #5	FORG. STL	A-181 Gr I	300#	40	113, 114	TUBE TURN #151	39383-G
	44	2	9×2 1/2"	SOCK. WELD RED SEE NOTE #5			150#	40	174, 175	TUBE TURN #150	
	45	1	2 1/2"	SOCK. WELD SEE NOTE #5			300#	40	172	TUBE TURN #151	

STUD & GASKET LIST

ALT NO	ITEM NO	PIPE SIZE	PRESS STD	MAX TEMP	STUDS AMT	STUDS DIA	STUDS LG	STUDS MAT'L	GASKETS AMT	GASKETS TYPE	GASKETS MAT'L	SERVICE	REMARKS	STUD REQ. NO.	GASKET REQ. NO.
5	46	2"	600#	590°F	32	5/8"	4"	CARB MOLY A193 GR B7	4	FLEX "CG"	STAIN STL	850# SERVICE STM.		39228	SHT. 39-84-1297
	47														
	48	1 1/2"	300#		4	3/4"	3 1/2"	CARB. MOLY A-193 Gr B-7	1	FLEX "CG"	STAIN. STL	150# SERVICE STEAM SYSTEM	TWO(2) A-194 CL. 4 NUTS PER STUD	39384	SUPPLY SHT. 39-84-1297
	49	3"	150#		12	5/8"	3 1/2"		3						39385-B
	50	2 1/2"	150#		12	5/8"	3 1/4"		3						
	51	1 1/4"	150#		28	1/2"	2 1/2"		7						
	52	1 1/4"	1500#		8	7/8"	4 3/4"		2			850# SERVICE STEAM SYSTEM			
	53	6"	900#	590°F	24	1 1/8"	7 1/2"	CARB. MOLY A-193 Gr B-7	2	FLEX. "CG"	STAIN. STL	850# SERVICE STEAM SYSTEM	TWO(2) A-194 CL. 4 NUTS PER STUD		
	54	4"	900#		120	1 1/8"	6 1/2"		15						
	55	3"	900#		32	7/8"	5 1/2"		4						
	56	2 1/2"	1500#		48	1"	6"		6						
2	57	2"	1500#		176	7/8"	5 1/2"		22						
2	58	1 1/2"	1500#		64	1"	5 1/4"		16						
	59	1"	1500#		48	7/8"	4 3/4"		12						
	60	12"	300#	734°F	32	1 1/8"	6 1/2"		2			250# SERVICE STEAM SYSTEM			SUPPLY SHT. 39-84-1297
	61	6"	300#		84	3/4"	4 3/4"		7						
	62	4"	300#		120	3/4"	4 1/4"		15						
	63	2"	300#		8	5/8"	3 1/4"		1						
	64	3 1/2"	300#		16	3/4"	4 1/4"		2						
	65	3"	300#		40	3/4"	4"		5						
	66	2 1/2"	300#		48	3/4"	3 3/4"		6						
	67	2"	150#	475°F	4	5/8"	3"		1			150# SERVICE STEAM SYSTEM			39385-B
	68	1 1/2"	150#		16	1/2"	2 3/4"		4						
	69	1"	150#		8	1/2"	2 1/2"		2						
	70	3/4"	150#		24	1/2"	2 1/4"		6						
	71	1/2"	150#		8	1/2"	2 1/4"		2						
	72	5"	150#		16	3/4"	3 3/4"		2			AT EXTERNAL DESUP.			
	73	5"	150#	450°F	—	—	—	—	12	RING	1/8" ASBESTOS MANVILLE "60"	142#, 135# & 35# SERVICE STEAM SYSTEM			39-84-1297
	74	4"	150#		—	—	—	—	16						
	75	3"	150#		—	—	—	—	11						
	76	2 1/2"	150#		—	—	—	—	2						
	77	2"	150#		—	—	—	—	6						
	78	1 1/2"	150#		—	—	—	—	19						
	79	1 1/4"	150#		—	—	—	—	17						
	80	1	150#		—	—	—	—	36						
	81	3/4"	150#		—	—	—	—	27						
	82	1/2"	150#		—	—	—	—	13						
	83	1"	150#		—	—	—	—	10	FULL FACE		AT SEACHEST. VALVES			
	84	1 1/2"	300#		—	—	—	—	2	RING		142#, 135# & 35# SERVICE STEAM SYSTEM			
	85	1"	300#		—	—	—	—	2	RING		142#, 135# & 35# SERVICE STEAM SYSTEM			

FITTING LIST CONT.

ALT NO	FITTING NO.	AMT	SIZE	MATERIAL	ASTM SPEC	DESCRIPTION	CAT. OR DWG NO.	SERVICE	REMARKS	REQ. NO.	REQ. NO.
	S-311	2	1/2"	CAST STL	A-216 WCB	600# SOCK. WELD. STRAINER	LESLIE FIG. 7209	150# STM TO L.P. DIST.	SCH. 80 BORE	393811-C	
	S-312	1	3"×3/8"	FORG STL	A-105 Gr II	SCH. 80 SOCKOLET I.P.S. RUN & OUTLET	BONNEY FORGE	164		39382-B	
	S-313	48	–	STEEL	A-307	5/8" DIA. HEX. HD BOLT × 3 1/2" LG WITH HEX NUT			DET. "6-A" & "7-A" REF. #1	UAO	
	S-314	48	-	STEEL	-	5/8" DIA. REG. STD PLAIN WASHER					
	S-315	48	-	ASBESTOS	-	WASHER 1 3/4" O.D. × 11/16" I.D. × 1/4" THK					
	S-316	5	-	STEEL ℞	A-36	CENTER FLG 12 3/4" O.D. × 4 17/32" I.D. × 3/4" THK			DET. "7-A" REF. #1	*	
	S-317	48	-	ASBESTOS	-	FERRULE 1" O.D. × 3/4" I.D. × 3/4" LG			DET "6-A" & "7-A" REF #1		
	S-318	5	-	ASBESTOS	-	RING 12 3/4" O.D. × 9 1/4" I.D. × 1/2" THK			DET. "7-A" REF. #1		
	S-319	2	2 1/2"×1/2"	FORG STL	A-105 Gr II	SCH. 80 SOCKOLET I.P.S. RUN & OUTLET	BONNEY FORGE	174, 175		39382-B	
	S-320	2	2 1/2"	FORG STL	A-105 Gr II	3000# SCRD. PIPE CAP	H.K. PORTER #1330	174, 175		39381-B	
3	S-321	1	4"×2 1/2"	FORG STL	A-105 Gr II	SCH. 40 SOCKOLET I.P.S. RUN & OUTLET	BONNEY FORGE	172		39382-F	
	S-322	1	3"×1 1/2"	FORG STL	A-105 Gr II	SCH 40 SOCKOLET	BONNEY FORGE	67			
	S-323	1	3"×1"	FORG STL	A-105 Gr II	SCH 40 SOCKOLET	BONNEY FORGE	65			
	S-324	2	3/8"	FORG STL	A-105 Gr II	SCH 80 SOCK. WELD TEE	H.K. PORTER #580	97, 101		39381-B	
	S-325	1	1/4"	FORG STL.	A-105 GR II	SCR'D. BOSS FIG. 7 EF.-358		74		UAO	
	S-326	4	3/8"	FORG. STL.	A-105 GR II	SCR'D. TEE 3000#	H.K. PORTER #530	BLR BURN. PRESS. SENS.		39381-B	
4	S-327	4	1 1/2"×1/2"	FORG. STL.	A-105 GR II	SCH. 80 S.W. TEE	H.K. PORTER #580	125, 125-4		39381-B (4)	39223 (4)
	S-328	2	1/4"	CAST STEEL	A-216 WCB	600# S.W. STRAINER		STM. TO BURNER CLEANER.	FURNISH BY B&W	———	

FITTING LIST CONT.

ALT NO.	FITTING NO.	AMT	SIZE	MATERIAL	A.S.T.M. SPEC.	DESCRIPTION	CAT. OR DWG NO.	SERVICE	REMARKS	REQ. NO.	RE
	S-272	6	1"	FORG. STL	A-105 Gr II	SCH. 80 SOCK. WELD. TEE	H.K. PORTER #580	103, 106, 108, 111, 135, 138			39
	S-273	2	1 1/2"×1"×1 1/2"					133, 16			
	S-274	1	1 1/2"×1"×1 1/4"					133			
	S-275	1	2"×1 1/2"×3/4"					118			
	S-276	2	3/4"			SCH. 80 SOCK. WELD. TEE	#580	119-2, 122			
4	S-277	3	1/2"			SCH. 80 SOCK. WELD. TEE	#580	125-2			39-
	S-278	2	1/2"×3/4"×3/4"×3/8"			SCH. 80 SOCK. WELD. CROSS	#880	95, 99			39
	S-279	1	1 1/2"			SCH. 80 SOCK. WELD. 90° ELL	#480	93			39-
	S-280	2	1 1/4"					112-1, 115			
	S-281	14	1"					111, 137, 138, 162, 106			
	S-282	9	3/4"			SCH. 80 SOCK. WELD 90° ELL	#480	121, 122, 157, 160			
4	S-283	7	1/2"					125-1, 125-6			
	S-284	8	3/8"					97, 101			
	S-285	4	1 1/2"×1 1/4"			SCH. 80 SOCK. WELD 90° ELL	#480	71, 144, 145, 19			39
	S-286	2	1"×1/2"					125-1, 125-6			
	S-287	1	1"×3/4"					143			
	S-288	2	1 1/4"×1/2"			REDUCER INSERT		76, 78			39
	S-289	1	2"×1"			SOCK. WELD 90° ELL	#480	128			
	S-290	6	1"			3000# SCRD PIPE CAP	#1330	134, 142			
	S-291	1	5"	CAST STL	A-216 WCB	150# FLGD SURFACE ABSORTION DESUP.	SCHUTTE KOERTING DWG #53-S-574-J-1	142# EMERG. STM SYS.			39
3	S-292	4	2 1/2"	SEAM. STL	A-234 WPB	SCH. 40, 90°, L.R. WELD ELL	TUBE TURN PART. 1	177, 178			39-
	S-293	2	12"	STEEL ℞	A-36	PIPE JOINT SLEEVE	EF-496 FIG 1	53			# U
	S-294	13	5"	STEEL	A-53			61, 63, 84, 85, 87, 90			
	S-295	11	4"		A-53			92-1, 165, 166, 172, 173-1, 173-2			
	S-296	8	3"		AISI C1015			61, 91-1, 130, 132-1			
	S-297	1	2 1/2"-1 1/4"	FORG. STL	A-105 Gr II	3000# THREDOLET I.P.S. RUN & OUTLET	BONNEY FORGE	93			39
	S-298	1	1 1/2"	STEEL	A-53	PIPE JOINT SLEEVE -	EF-496 FIG. 1	133			U
	S-299	3	1"-3/4"	FORG. STL	A-105 Gr II	3000# THREDOLET I.P.S. RUN & OUTLET	BONNEY FORGE	106, 111, 122			39
	S-300	2	5"×3/4"			SCH. 80 SOCKOLET	BONNEY FORGE	84, 172			
	S-301	2	3/4"×3/4"×1/2"			SCH. 80 SOCK WELD TEE	H.K. PORTER #580	96, 100			39
	S-302	1	3/4"×3/4"×1/4"			SCH. 80 SOCK WELD TEE	H.K. PORTER #580	157			
	S-303	2	1"×1/4"	FORG. STL	A-105 Gr II	SCH. 80 SOCK. WELD. REDUCER	H.K. PORTER #1180	105, 110			
	S-304	2	1"×1/2"	FORG. STL.	A-105 Gr II	SCH. 80 SOCK WELD. REDUCER INSERT	H.K. PORTER	104, 109			
	S-305	3	3/4"×1/2"	FORG STL	A-105 Gr II	SCH. 80 SOCK WELD REDUCER INSERT	H.K. PORTER	120, 121, 157			
	S-306	1	1 1/4"×1"	FORG STL	A-105 Gr II	SCH. 80 SOCK WELD. REDUCER INSERT	H.K. PORTER	113			
	S-307	1	1 1/4"×1"×3/8"	FORG. STL	A-105 Gr II	SCH 80 SOCK WELD. TEE	H.K. PORTER #580	114			39
	S-308	1	3/8"	FORG STL	A-105 Gr II	3000# SOCK. WELD UNION	H.K. PORTER 9820	138			39-
	S-309	1	3/8"×1/4"	FORG. STL	A-105 Gr II	3000# SCRD. REDUCER	H.K. PORTER #1130	138			39
	S-310	1	1 1/4"×1×3/4"	FORG STL	A-105 Gr II	SCH. 80 SOCK. WELD. TEE	H.K. PORTER #580	131			

FITTING LIST CONT'D PANEL 9

FLANGE LIST

ALT. NO.	ITEM NO.	AMT	SIZE	TYPE	MATERIAL	A.S.T.M. SPEC.	PRESS STD	SCH. BORE	LOCATION	CAT. OR DWG. NO.	RE
	1	1	6"	WELD. NECK	FORG. STL	A-105 Gr II	900#	80	15	TUBE TURN #34	393
	2	18	4"				900#	80	1, 2, 3, 4, 5, 6, 7, 12, 13, 14		
	3	2	3"				900#	80	13, 22		
	4	8	2 1/2"				1500#	80	7, 8, 9, 10, 11	TUBE TURN #35	(4) 393 (4) 39
	5	2	2"				1500#	80	9, 11	TUBE TURN #35	393
	6	9	4"			A-181 Gr I	300#	40	54, 55, 56, 57, 58	TUBE TURN #31	393
	7	2	3 1/2"				300#	40	56, 57		
	8	6	2 1/2"				300#	40	55, 177, 178, 178-1		(4) 39 (8) 39
5 / 2	9	25	2"	SOCK. WELD.		A-105 Gr II	1500#	80	1, 4, 14, 15, 27, 28, 29, 30, 31, 38, 39, 40, 41, 176, 176-1, 35, 45	TUBE TURN #1558	393
2	10	28	1 1/2"				1500#	80	16, 17, 29, 30, 31, 32, 33, 34, 36, 37, 18, 39, 40, 41, 42, 43, 44, 46, 47, 19, 20		(4) 39 (6) 39
	11	13	1"				1500#	80	12, 20, 22, 23, 24, 25, 26, 27		(12) 39 (4) 39
	12	1	2"				1500#	40	93		393
	13	1	1"				1500#	40	93		
	14	2	1 1/2"			A-181 Gr I	300#	40	93, 130	TUBE TURN #151	393
	15	1	2"	WELD. NECK			300#	40	177	TUBE TURN #31	
3	16	9	2"	SOCK. WELD. SEE NOTE #5			150#	40	67, 84, 87, 118, 127, 128, 70, 72	TUBE TURN #150	393
	17	33	1 1/2"				150#	40	67, 71, 72, 73, 74, 93, 94, 95, 98, 98-1, 98-2, 98-3, 98-4, 98-5, 98-6, 99, 118, 124, 124-1, 124-2, 127, 130, 140		393
	18	44	1"				150#	40	79, 87, 90, 103, 104, 105, 106, 108, 109, 110, 111, 128, 129, 133, 134, 135, 136, 137, 138, 142(5), 143, 146, 147, 148, 161, 162		
	19	36	3/4"				150#	80	64, 79, 80, 81, 96, 118, 119, 148, 149, 150, 151, 152, 153, 154, 155, 156, 119-1, 119-2, 120, 121, 122, 139, 160		
	20	2	3 7/8"×1/2"	S.W. RED.			150#	40	82, 83		393
	21	1	6"	SLIP-ON		A-105 Gr II	900#	-	48	TUBE TURN #54	
	22	2	3"			A-105 Gr II	900#	-	64, 180	TUBE TURN #54	
	23	2	12"			A-181 Gr I	300#	-	52, 53	TUBE TURN #51	393
	24	8	6"				300#	-	48, 49, 50, 51, 53		
	25	7	4"				300#	-	48, 54, 59, 60, 62		
	26	7	3"				300#	-	48, 51, 52, 59, 61, 180		
	27	2	2 1/2"				300#	-	60, 61		
3	28	1	2 1/2"				150#	-	70		393
	29	1	12"	SLIP-ON SEE NOTE #5	FORG STL	A-181 Gr I	150#	-	53	TUBE TURN #50	393
	30	22	5"	SLIP-ON SEE NOTE #5	FORG STL	A-181 Gr I	150#	-	63, 84, 84-1, 85, 86, 87, 88, 89, 90, 61, 62	TUBE TURN #50	

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M-4639.371-09.10
Sys.27 ALt.8
M-431

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

FITTING LIST (CONT.)

ALT NO	FITTING NO	AMT	SIZE	MATERIAL	ASTM SPEC	DESCRIPTION	CAT. OR DWG NO.	SERVICE	REMARKS	REQ. NO.	REQ. NO.
	S-329	1	5"×2"	SEAM. STL	A-234 WPB	SCH. 80 CONC. WELD. REDUCER	TUBE TURN #91	15		39380-H	
	S-330	1	4"×3"	SEAM. STL	A-234 WPB	SCH. 80 CONC. WELD. REDUCER		13			
	S-331	1	2½"×1"	SEAM. STL	A-234 WPB	SCH. 80 CONC. WELD. REDUCER		22			
	S-332	1	1½"×1"	SEAM. STL	A-234 WPB	SCH. 80 CONC. WELD. REDUCER		20			
	S-333	1	3"×2"	SEAM. STL	A-234 WPB	SCH. 40 CONC. WELD. REDUCER	TUBE TURN #90	67			
3	S-334	2	2½"×2"	SEAM. STL	A-234 WPB	SCH. 40 CONC. WELD. REDUCER	TUBE TURN #90	177, 70		(2) 39380-H (2) 39380-R	
	S-335	1	3"×2½"	FORG. STL	A-105 Gr II	SCH. 40 WELDOLET I.P.S. RUN & OUTLET	BONNEY FORGE	66		39382-B	
	S-336	1	3"×2"	FORG. STL	A-105 Gr II	SCH. 40 SOCKOLET	BONNEY FORGE	64			
	S-337	6	1½"	FORG. STL	A-105 Gr II	3000# SCRD UNION STL TO STL SEAT	H.K. PORTER #9800	133		39381-B	
	S-338	6	1¼"	FORG. STL	A-105 Gr II	3000# SCRD UNION STL TO STL SEAT		140			
	S-339	3	1"	FORG. STL	A-105 Gr II	3000# SCRD UNION STL TO STL SEAT		134			
	S-340	1	5"×3"	SEAM. STL	A-234 WPB	SCH. 40 CONC. WELD. REDUCER	TUBE TURN #90	87		39380-H	
	S-341	1	-	STEEL	-	CENTER FLG 11¼" O.D. × 3 17/32" I.D. × ¾" THK.			DET "6-A" REF #1	* UAO	
	S-342	1	-	ASBESTOS	-	RING 11¼" O.D. × 7¾" I.D. × ½" THK.			DET. "6-A" REF #1	39385-B	
	S-343	1	4"	SEAM. STL	A-234 WPB	SCH 40 S.R. 90° WELDELL	TUBE TURN #3	92-1		39380-H	
	S-344	4	¼"	FORG. STL	A-105 Gr I	EX. HVY SOCK. WELD. BOSS	FIG. 8 EF-358	31, 41		UAO	
2	S-345	4	2"×1½"×2"	FORG. STL	A-105 Gr II	SCH. 80 SOCK. WELD TEE	H.K. PORTER #580	35, 45		39381-B	
3	S-346	2	1½"	STEEL	S.A.E. 1020	SCH. 80 TYPE "B" CHILL RING	BETH. STD EF-358	20		392216-A	
3	S-347	3	12"	SEAM. ST'L.	A-234 WPB	SCH. 40 45° WELDELL	TUBE TURN #5	53		39380-R	
4	S-348	1	¾"×½"×¾"	FORG. ST'L.	A-105 GR. II	SCH. 80 SOCKET WELD TEE	H.K. PORTER #580	182		39223	
	S-349	1	5"×½"			SCH. 40 SOCKOLET - I.P.S. RUN & OUTLET	BONNY FORGE	85		392214	
	S-350	2	¾"×½"×¾"			SCH. 80 S/W. TEE	H.K. PORTER #580	149		39223	
5	S-351	2	4"×2"	SEAM. ST'L	A-234 WPB	SCH. 40, CONC. WELD REDUCER	TUBE TURN #90			22-39222	
	S-352	2	3/4"	FORGED ST'L	A-105 GR. II	3000# SCR'D HALF COUPLING	WATSON-STILLMAN FIG. 1238			22-39223-A	

FLANGE LIST CONT.

ALT NO	ITEM NO.	AMT	SIZE	TYPE	MATERIAL	A.S.T.M. SPEC.	PRESS STD	SCH. BORE	LOCATION	CAT. OR DWG NO.	REQ. NO.
	31	28	4"	SLIP-ON SEE NOTE #5	FORG STL	A-181 Gr I	150#	-	90, 92, 92-1, 165, 166, 167, 168, 169, 170, 171, 172, 173, 173-1, 173-2 FLAT FACED	TUBE TURN #50	39383-B
5	32	20	3"	SLIP-ON SEE NOTE #5			150#	-	129, 130, 132, 132-1, 132-2, 64, 65, 66, 67, 87, 91, 91-1	TUBE TURN #50	
	33	1	2½"	SOCK. WELD SEE NOTE #5			150#	40	132-1, 66	TUBE TURN #150	
	34	1	2"	SOCK. WELD. SEE NOTE #5			300#	40	64	TUBE TURN #151	39383-G
5	35	4	2"	SOCK. WELD		A-105 GR II	600#	80	29, 28, 38, 39	TUBE TURN #152	39221
	36	26	1¼"	SOCK. WELD SEE NOTE #5	FORG. STL	A-181 Gr I	150#	40	90, 112, 113, 114, 115, 130, 131, 133, 140, 144, 145, 112-1, 72, 75, 76, 77, 78	TUBE TURN #150	39383-B
	37	1	1¼"	SOCK. WELD.		A-105 Gr II	1500#	80	19	TUBE TURN #1558	39383-G
	38	1	1¼"	SOCK. WELD.		A-105 Gr II	1500#	40	64	TUBE TURN #1558	
	39	22	½"	SOCK. WELD SEE NOTE #5		A-181 Gr I	150#	80	157, 125, 104, 105, 109, 110, 120, 121, 125-1, 125-2, 125-3, 125-4, 125-5, 125-6, 76, 78	TUBE TURN #150	39383-B
	40	2	6"×1"	SOCK. WELD RED SEE NOTE #5			150#	40	106, 111		39383-G
	41	1	5"×¾"				150#	80	122		
	42										
	43	2	1"	SOCK. WELD SEE NOTE #5	FORG. STL	A-181 Gr I	300#	40	113, 114	TUBE TURN #151	39383-G
	44	2	9×2½"	SOCK. WELD RED SEE NOTE #5			150#	40	174, 175	TUBE TURN #150	
	45	1	2½"	SOCK. WELD SEE NOTE #5			300#	40	172	TUBE TURN #151	

STUD & GASKET LIST

ALT NO	ITEM NO	PIPE SIZE	PRESS STD	MAX TEMP	STUDS AMT	STUDS DIA	STUDS LG	STUDS MAT'L	GASKETS AMT	GASKETS TYPE	GASKETS MAT'L	SERVICE	REMARKS	STUD REQ. NO.	GASKET REQ. NO.
5	46	2"	600#	590°F	32	5/8"	4"	CARB MOLY A193 GR B7	4	FLEX "CG"	STAIN STL	850# SERVICE STM.		39228	SHT. 39-84-1297
	47														
	48	1½"	300#		4	¾"	3½"	CARB. MOLY A-193 Gr B-7	1	FLEX "CG"	STAIN. STL	150# SERVICE STEAM SYSTEM	TWO(2) A-194 CL. 4 NUTS PER STUD	39384	SUPPLY SHT. 39-84-1297
	49	3"	150#		12	⅝"	3½"		3						39385-B
	50	2½"	150#		12	⅝"	3¼"		3						
	51	1¼"	150#		28	½"	2½"		7						
	52	1¼"	1500#		8	⅞"	4¾"		2			850# SERVICE STEAM SYSTEM			
	53	6"	900#	590°F	24	1⅛"	7½"	CARB. MOLY A-193 Gr B-7	2	FLEX. "CG"	STAIN. STL	850# SERVICE STEAM SYSTEM	TWO(2) A-194 CL. 4 NUTS PER STUD		
	54	4"	900#		120	1⅛"	6½"		15						
	55	3"	900#		32	⅞"	5½"		4						
	56	2½"	1500#		48	1"	6"		6						
2	57	2"	1500#		176	⅞"	5½"		22						
2	58	1½"	1500#		64	1"	5¼"		16						
	59	1"	1500#		48	⅞"	4¾"		12						
	60	12"	300#	734°F	32	1⅛"	6½"		2			250# SERVICE STEAM SYSTEM			SUPPLY SHT. 39-84-1297
	61	6"	300#		84	¾"	4¾"		7						
	62	4"	300#		120	¾"	4¼"		15						
	63	2"	300#		8	⅝"	3¼"		1						
	64	3½"	300#		16	¾"	4¼"		2						
	65	3"	300#		40	¾"	4"		5						
	66	2½"	300#		48	¾"	3¾"		6						
	67	2"	150#	475°F	4	⅝"	3"		1			150# SERVICE STEAM SYSTEM			39385-B
	68	1½"	150#		16	½"	2¾"		4						
	69	1"	150#		8	½"	2½"		2						
	70	¾"	150#		24	½"	2¼"		6						
	71	½"	150#		8	½"	2¼"		2						
	72	5"	150#		16	¾"	3¾"		2			AT EXTERNAL DESUP.			
	73	5"	150#	450°F	—	—	—	—	12	RING	⅛" ASBESTOS MANVILLE CO	142#, 135# & 35# SERVICE STEAM SYSTEM			39-84-1297
	74	4"	150#		—	—	—	—	16						
	75	3"	150#		—	—	—	—	11						
	76	2½"	150#		—	—	—	—	2						
	77	2"	150#		—	—	—	—	6						
	78	1½"	150#		—	—	—	—	19						
	79	1¼"	150#		—	—	—	—	17						
	80	1	150#		—	—	—	—	36						
	81	¾"	150#		—	—	—	—	27						
	82	½"	150#		—	—	—	—	13						
	83	1"	150#		—	—	—	—	10	FULL FACE		AT SEACHEST. VALVES			
	84	1½"	300#		—	—	—	—	2	RING		142#, 135# & 35# SERVICE STEAM SYSTEM			
	85	1"	300#		—	—	—	—	2	RING		142#, 135# & 35# SERVICE STEAM SYSTEM			

FITTING LIST CONT.

ALT NO	FITTING NO	AMT	SIZE	MATERIAL	ASTM SPEC	DESCRIPTION	CAT. OR DWG NO.	SERVICE	REMARKS	REQ. NO.	REQ. NO.
	S-311	2	½"	CAST STL	A-216 WCB	600# SOCK. WELD. STRAINER	LESLIE FIG. 7209	150# STM TO L.P. DIST.	SCH. 80 BORE	393811-C	
	S-312	1	3"×⅜"	FORG STL	A-105 Gr II	SCH. 80 SOCKOLET I.P.S. RUN & OUTLET	BONNEY FORGE	164		39382-B	
	S-313	48	-	STEEL	A-307	⅝" DIA. HEX. HD BOLT × 3¼" LG WITH HEX NUT			DET. "6-A" & "7-A" REF #1	UAO	
	S-314	48	-	STEEL	-	⅝" DIA. REG. STD PLAIN WASHER					
	S-315	48	-	ASBESTOS	-	WASHER 1¾" O.D. × 11/16" I.D. × ¼" THK					
	S-316	5	-	STEEL PL	A-36	CENTER FLG 12¾" O.D. × 4 7/32" I.D. × ¾" THK			DET. "7-A" REF #1		
	S-317	48	-	ASBESTOS	-	FERRULE 1" O.D. × ¾" I.D. × ¾" LG			DET "6-A" & "7-A" REF #1		
	S-318	5	-	ASBESTOS	-	RING 12¾" O.D. × 9¼" I.D. × ½" THK			DET. "7-A" REF #1		
	S-319	2	2½"×½"	FORG STL	A-105 Gr II	SCH. 80 SOCKOLET I.P.S. RUN & OUTLET	BONNEY FORGE	174, 175		39382-B	
	S-320	2	2½"	FORG STL	A-105 Gr II	3000# SCRD. PIPE CAP	H.K. PORTER #1330	174, 175		39381-B	
3	S-321	1	4"×2½"	FORG STL	A-105 Gr II	SCH. 40 SOCKOLET I.P.S. RUN & OUTLET	BONNEY FORGE	172		39382-F	
	S-322	1	3"×1½"	FORG STL	A-105 Gr II	SCH 40 SOCKOLET	BONNEY FORGE	67			
	S-323	1	3"×1"	FORG STL	A-105 Gr II	SCH 40 SOCKOLET	BONNEY FORGE	65			
	S-324	2	⅜"	FORG STL	A-105 Gr II	SCH 80 SOCK. WELD. TEE	H.K. PORTER #580	97, 101		39381-B	
	S-325	1	1/4"	FORG STL.	A-105 GR II	SCR'D. BOSS FIG. 7 EF.-358		74		UAO	
	S-326	4	3/8"	FORG. STL.	A-105 GR II	SCR'D. TEE 3000#	H.K. PORTER #530	BLR BURN. PRESS. SENS.		39381-B	
4	S-327	4	½"×½"×¼"	FORG. STL.	A-105 GR II	SCH. 80 S.W. TEE	H.K. PORTER #580	125, 125-4		39381-B (4)	39223 (4)
	S-328	2	1/4"	CAST STEEL	A-216 WCB	600# S.W. STRAINER		STM. TO BURNER CLEANER	FURNISH BY B&W	—	

F 4

M-4639-371-09-10
Sys. 27 Alt. 8
M-431

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

MARK	QUANTITY	DESCRIPTION	REMARKS
1	3	STEEL CHAIRS 6"SIS-#5 PLATE	TYPE "A" SEE DETAIL
2	7	6"SIS-#5 PLATE	TYPE "B"
3	1	6"SIS-#5 PLATE	TYPE "C"
4	1	8"SIS-#5 PLATE	TYPE "D"
5	18	4"SIS-#5 PLATE	TYPE "E"
6	122	4"SIS-#5 PLATE	TYPE "F"
7	11	4"SIS-#5 PLATE	TYPE "G"
8	7	4"SIS-#5 PLATE	TYPE "H"
9	2	3½SIS-#5 PLATE	TYPE "J"
10	2	3"SIS-#5 PLATE	TYPE "K"
11	2	3"SIS-#5 PLATE	TYPE "L"
12	6	2½SIS-#5 PLATE	TYPE "M"
13	6	2½SIS-#5 PLATE	TYPE "N"
14	5	2½SIS-#5 PLATE	TYPE "P"
15	8	2½SIS-#5 PLATE	TYPE "Q"
16	7	2½SIS-#5 PLATE	TYPE "R"
17	2	2"SIS-#5 PLATE	TYPE "S"
18	2	2"SIS-#5 PLATE	TYPE "T"
19	1	2"SIS-#5 PLATE	TYPE "U"
20	1	1"x 10"x 1'-3"	PL. 1"x 10"x 1'-3"
21	1	1"x 10"x 1'-3"	PL. 1"x 10"x 1'-3"
22	2	1"x 10"x 1'-3"	PL. 1"x 10"x 1'-3"

4646	31	10 DET. CONTINUOUS	12-2-69			
4643	32	10 DET. CONTINUOUS	12-2-69			
NO.		REVISION	DATE	CHECKED	APPROVED	

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIV.
QUINCY, MASS. 02169

JOB NO. 571

DETAILS OF 4"x 3½"x 5/16" ANGLE STRUT FRAMES

DATE: 12/69 SCALE: 3/4" = 1'-0"
DRAWN: [illegible] DATE: 12/69 SHT. 1 OF 1 SHTS.
TRACED: [illegible] DATE: [illegible] ALT. NO.
CHECKED: [illegible] DATE: [illegible]
APPROVED: [illegible] DATE: [illegible]

PLAN NO. M-4639-271-69-11 ALT. NO. 4
DETAILS OF 4"x 3½"x 5/16" ANGLE STRUT FRAMES
M-482

ALT.	SHT.	DESCRIPTION	BY	DATE
1	1	CHANGED 3½"x 3½"x 5/16" ANGLE STRUT TO 4"x 3½"x 5/16" ANGLE STRUT AS SHOWN ON THIS SHT.	AJ	1/2/70
2	1	ADDED 4"x 3½"x 5/16" ANGLE STRUT AS SHOWN ON THIS SHT.	AJ	1/2/70
3	1	CHANGED 2½"x 2½"x 5/16" ANGLE STRUT TO 2½"x 3½"x 5/16" ANGLE STRUT AS SHOWN ON THIS SHT.	AJ	1/2/70
4	1	ADDED 2½"x 2½"x 5/16" ANGLE STRUT AS SHOWN ON THIS SHT.	AJ	1/2/70

BETHLEHEM STEEL CORP.
SHIPBUILDING DIV.
QUINCY, MASS.

DETAILS OF 4"x 3½"x 5/16" STRUT FRAMES

DRAWN: [illegible] DATE: 12/69 SHT. 1 OF 1 SHTS.
CHECKED: [illegible] DATE: [illegible]

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X
M-482 SHT. 1, 2, 3, 4

M-4639-4640
Sht. 5,6,7,8
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

NO	QUANT	MARK	DESCRIPTION
1	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
2	4	PIPE 8 STD	4" SCH 80 SMLS PIPE
3	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
4	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
5	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
36	1	PIPE 8 STD	4" SCH 80 SMLS PIPE

Catalog No. EF-368

BETH. STEEL CORP.	DWG. NO. 1
SHIPBUILDING	DWG. NO. 371
SPARROWS PT. MD	DRAWN Pond

M-4639-371-09-11
SHT. 1 OF 4
SCALE: 1/4" = 1'-0"
DRAWN Pond SHT. 4 OF 4

NO	QUANT	MARK	DESCRIPTION
1	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
2	4	PIPE 8 STD	4" SCH 80 SMLS PIPE
3	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
4	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
5	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
36	1	PIPE 8 STD	4" SCH 80 SMLS PIPE

Catalog No. EF-368

BETH. STEEL CORP.	DWG. NO. 1
SHIPBUILDING	DWG. NO. 371
SPARROWS PT. MD	DRAWN Pond

M-4639-371-09-11
SHT. 2 OF 4
SCALE: 1/4" = 1'-0"
DRAWN Pond SHT. 4 OF 4

NO	QUANT	MARK	DESCRIPTION
1	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
2	2	PIPE 8 STD	4" SCH 80 SMLS PIPE

Catalog No. EF-368

BETH. STEEL CORP.	DWG. NO. 1
SHIPBUILDING	DWG. NO. 371
SPARROWS PT. MD	DRAWN Pond

M-4639-371-09-11
SHT. 3 OF 4
SCALE: 1/4" = 1'-0"
DRAWN Pond SHT. 4 OF 4

NO	QUANT	MARK	DESCRIPTION
1	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
2	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
3	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
4	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
5	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
6	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
7	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
8	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
9	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
10	1	PIPE 8 STD	4" SCH 80 SMLS PIPE

Catalog No. EF-368

BETH. STEEL CORP.	DWG. NO. 1
SHIPBUILDING	DWG. NO. 371
SPARROWS PT. MD	DRAWN Pond

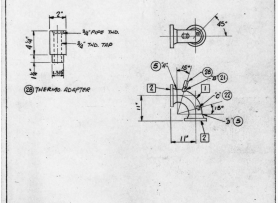
M-4639-371-09-11
SHT. 4 OF 4
SCALE: 1/4" = 1'-0"
DRAWN Pond SHT. 4 OF 4

NO	QUANT	MARK	DESCRIPTION
1	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
2	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
3	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
4	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
5	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
6	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
7	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
8	2	PIPE 8 STD	4" SCH 80 SMLS PIPE
9	1	PIPE 8 STD	4" SCH 80 SMLS PIPE
10	1	PIPE 8 STD	4" SCH 80 SMLS PIPE

Catalog No. EF-368

BETH. STEEL CORP.	DWG. NO. 1
SHIPBUILDING	DWG. NO. 371
SPARROWS PT. MD	DRAWN Pond

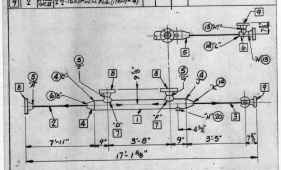
MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	1	A-36 PL 1/2	4" SCH 80 L.R. 90° MALL. (C-209)	5	2	1/2" STL	4" TYPE "A" CHILL RING
2	2	A-105 GR.2	4"-900# M.H. FLG. (STAMP #2)	21	1	F.S.	1/2" SQUARE HELLED. BOSS FIG. 8, EF-358
				22	1	F.S.	3/4" SQUARE HELLED BOSS FIG. 9 EF-358
				28	1	F.S.	THERM. ADAPTER



M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 8	HULLS 4639 4640		
SHIPBUILDING	SK. NO. 27-5	SERVICE AUX. STEAM		ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN RMM	SH. 10 OF	

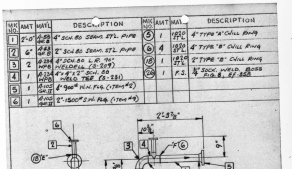
MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	5'-2"	A-53 GR.B	6" SCH 80 SEAM. STL. PIPE	4	2	1/2" STL	6" TYPE "A" CHILL RING
2	2'-0"	A-53 GR.B	4" SCH 80 SEAM. STL. PIPE	5	3	1/2" STL	4" TYPE "A" CHILL RING
3	2'-10"	A-53 GR.B	2" SCH 80 SEAM. STL. PIPE	6	1	1/2" STL	4" TYPE "B" CHILL RING
4	1	A-234 GR.WPB	6"x4" SCH 80 SQUG. WELD. RED. (C-220)	13	2	1/2" STL	6" TYPE "B" CHILL RING
5	1	A-234 GR.WPB	4"x2" SCH 80 SQUG. WELD. RED. (C-221)	14	2	1/2" STL	2" TYPE "B" CHILL RING
6	1	A-234 GR.WPB	2"x2" SCH 80 WELDTEE (C-232)	23	1	F.S.	1/2" SQ. BOSS FIG. 8 EF-358
7	2	A-105 GR.2	6"-900# M.H. FLG. (STAMP #3)				
8	3	A-105 GR.2	4"-900# M.H. FLG. (STAMP #2)				
9	2	A-105 GR.2	2"x2"-1500# M.H. FLG. (STAMP #4)				



M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 7	HULLS 4639 4640		
SHIPBUILDING	SK. NO. 27-7	SERVICE AUX. STEAM		ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN RMM	SH. 12 OF	

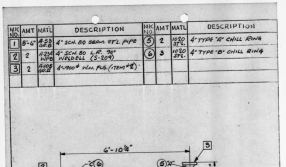
MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	5'-0"	A-53 GR.B	4" SCH 80 SEAM. STL. PIPE	5	1	1/2" STL	4" TYPE "A" CHILL RING
2	6'-8"	A-53 GR.B	2" SCH 80 SEAM. STL. PIPE	6	4	1/2" STL	4" TYPE "B" CHILL RING
3	2	A-234 GR.WPB	4"x2" SCH 80 L.R. 90° WELDED. (C-209)	13	1	1/2" STL	6" TYPE "B" CHILL RING
4	1	A-234 GR.WPB	4"x2" SCH 80 WELDTEE (C-232)	24	1	F.S.	3/4" SQ. BOSS FIG. 8, EF-358
5	1	A-105 GR.2	4"-900# M.H. FLG. (STAMP #2)				
6	1	A-105 GR.2	2"-1500# M.H. FLG. (STAMP #4)				



M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 4	HULLS 4639 4640		
SHIPBUILDING	SK. NO. 27-4	SERVICE AUX. STEAM		ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN RMM	SH. 9 OF	

MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	8'-0"	A-53 GR.B	4" SCH 80 SEAM. STL. PIPE	5	2	1/2" STL	4" TYPE "A" CHILL RING
2	6'-6"	A-234 GR.WPB	4" SCH 80 L.R. 90° WELDED. (C-209)	6	3	1/2" STL	4" TYPE "B" CHILL RING
3	2	A-105 GR.2	4"-900# M.H. FLG. (STAMP #2)				



M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 6	HULLS 4639 4640		
SHIPBUILDING	SK. NO. 27-6	SERVICE AUX. STEAM		ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN RMM	SH. 11 OF	

M-4639-371-09-11
Sys. 27 Alt. 9
M-432 Sht. 9, 10, 11, 12
H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X

M1-4639-571-09-11
Jobs 7 ALT. 4
M1-432-SHTS 13,14,15,16

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

NO.	MAT	MATL	DESCRIPTION	NO.	MAT	MATL	DESCRIPTION
1	/	#56	1¾" PLATE GR50	(3)	1	#56	1¾" PLATE GR50
2	/	#56	2½" PLATE GR50	(7)	1	#56	2½" PLATE GR50
3	1	#56	12" WIDE FLG (Item #5)	(4)	1	#56	12" WIDE FLG (Item #5)

Optional Hub
EF-588

M-4639-571-09-11

BETH. STEEL CORP. | PURCH. NO. # | HULL 4639 & 4640 | SKETCH NO. 11
SHIPBUILDING | JOB NO. 871 | DRAWING APPROVAL OF
SHEARING DEPT. HD

NO.	MAT	MATL	DESCRIPTION	NO.	MAT	MATL	DESCRIPTION
1	/	#56	1¾" PLATE GR50	(3)	1	#56	1¾" PLATE GR50
2	/	#56	2½" PLATE GR50	(7)	1	#56	2½" PLATE GR50
3	1	#56	12" WIDE FLG (Item #5)	(4)	1	#56	12" WIDE FLG (Item #5)

Optional Hub
EF-588

M-4639-571-09-11

BETH. STEEL CORP. | PURCH. NO. # | HULL 4639 & 4640 | SKETCH NO. 11
SHIPBUILDING | JOB NO. 871 | DRAWING APPROVAL OF
SHEARING DEPT. HD

NO.	MAT	MATL	DESCRIPTION	NO.	MAT	MATL	DESCRIPTION
1	Rolled	#56	2¼" Min Rib Stock STL PIPE	(5)	2	#56	2½" TYP. "A" COIL Assy
2	Rolled	#56	2½" Min Rib Stock STL PIPE	(4)	1	#56	2½" TYP. "A" COIL Assy
3	2	#56	2½" Hub PIPE				

Optional Hub
EF-588

M-4639-571-09-11

BETH. STEEL CORP. | PURCH. NO. # | HULL 4639 & 4640 | SKETCH NO. 11
SHIPBUILDING | JOB NO. 871 | DRAWING APPROVAL OF
SHEARING DEPT. HD

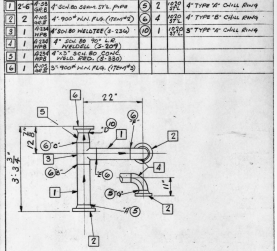
NO.	MAT	MATL	DESCRIPTION	NO.	MAT	MATL	DESCRIPTION
1	Rolled	#56	2¼" Min Rib Stock STL PIPE	(5)	2	#56	2½" TYP. "A" COIL Assy
2	Rolled	#56	2½" Min Rib Stock STL PIPE	(4)	1	#56	2½" TYP. "A" COIL Assy
3	2	#56	2½" Hub PIPE				

Optional Hub
EF-588

M-4639-571-09-11

BETH. STEEL CORP. | PURCH. NO. # | HULL 4639 & 4640 | SKETCH NO. 11
SHIPBUILDING | JOB NO. 871 | DRAWING APPROVAL OF
SHEARING DEPT. HD

MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	2-6	A-53 GR.B	4" SCH. 80 SEAM. STL. PIPE	5	2	1020 STL	4" TYPE "A" CHILL RING
2	2	A-105 GR.B	4"-900# W.N. FLG. (ITEM #2)	6	4	1020 STL	4" TYPE "B" CHILL RING
3	1	A-234 GR.B	4" SCH. 80 WELDTEE (S-236)	10	1	1020 STL	3" TYPE "A" CHILL RING
4	1	A-234 GR.B	4" SCH. 80 90° L.R. WELDELL (S-209)				
5	1	A-234 GR.B	4"x3" SCH. 80 CONC. WELD. RED. (S-330)				
6	1	A-105 GR.B	3"-900# W.N. FLG. (ITEM #3)				

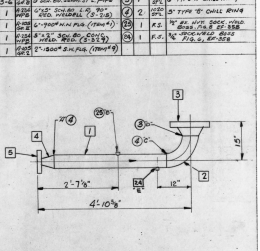


CERTIFIED WELD
EF-358

M-4639-371-09-11

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD	PIPE NO. 13	HULLS 4639 4640		
	SK. NO. 27-13	SERVICE AUX. STEAM		ALT.
	JOB NO. 371	DRAWN AWN.	SH. 18 OF	6

MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	3-6	A-53 GR.B	5" SCH. 80. SEAM. STL. PIPE	3	1	1020 STL	6" TYPE "A" CHILL RING
2	1	A-234 GR.B	6"x5" SCH. 80. L.R. 90° WELDELL (S-215)	4	2	1020 STL	5" TYPE "B" CHILL RING
3	1	A-105 GR.B	6"-900# W.N. FLG. (ITEM #1)	25	1	F.S.	7/8" RE. WIRE SOCK. WELD. BOSS. MAG. EF-358
4	1	A-234 GR.B	5"x3" SCH. 80. CONC. WELD. RED. (S-229)	26	1	F.S.	7/8" SOCK. WELD. BOSS. FIG. 6, EF-358
5	1	A-105 GR.B	2"-1500# S.W. FLG. (ITEM #9)				

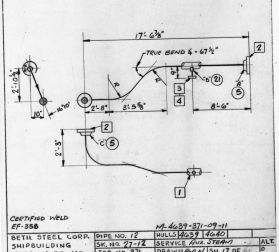


CERTIFIED WELD
EF-358

M-4639-371-09-11

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD	PIPE NO. 15	HULLS 4639 4640		
	SK. NO. 27-15	SERVICE AUX. STEAM		ALT.
	JOB NO. 371	DRAWN AWN.	SH. 20 OF	3

MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	20-6	A-53 GR.B	4" SCH. 80. SEAM. STL. PIPE	5	2	1020 STL	4" TYPE "A" CHILL RING
2	2	A-105 GR.B	4"-900# W.N. FLG. (ITEM #2)	21	1	F.S.	1" SOCK. WELD. BOSS MAG. EF-358
3	1	A-105 GR.B	1"-1500# S.W. FLG. (ITEM #11)				
4	–	A-53 GR.B	1" SCH. 80 SEAM. STL. PIPE				

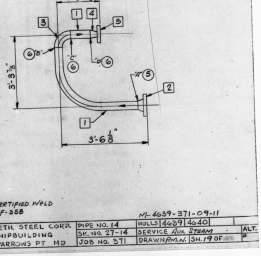


CERTIFIED WELD
EF-358

M-4639-371-09-11

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD	PIPE NO. 12	HULLS 4639 4640		
	SK. NO. 27-12	SERVICE AUX. STEAM		ALT.
	JOB NO. 371	DRAWN AWN.	SH. 17 OF	6

MK NO	AMT	MATL	DESCRIPTION	MK NO	AMT	MATL	DESCRIPTION
1	6-6	A-53 GR.B	4" SCH. 80. SEAM. STL. PIPE	5	1	1020 STL	4" TYPE "A" CHILL RING
2	1	A-105 GR.B	4"-900# W.N. FLG. (ITEM #2)	6	3	1020 STL	4" TYPE "B" CHILL RING
3	1	A-234 GR.B	4"-SCH. 80 L.R. 90° WELDELL (S-209)				
4	1	A-234 GR.B	4"x3" SCH. 80 CONC. WELD. RED. (S-229)				
5	1	A-105 GR.B	2"-1500# S.W. FLG. (ITEM #9)				



CERTIFIED WELD
EF-358

M-4639-371-09-11

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT. MD	PIPE NO. 14	HULLS 4639 4640		
	SK. NO. 27-14	SERVICE AUX. STEAM		ALT.
	JOB NO. 371	DRAWN AWN.	SH. 19 OF	6

M-4639-371-09-11
Sys. 27 ALT. 4
M-432 Sht. 17, 18, 19, 20

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

M-4639-37/09-11
Sys.2 Alt. 4
M-4632 Sht. 21, 22, 23, 24 H 4639-4640
BETHLEHEM STEEL CORP. JULY 1974
6X

NO.	QUANT	MATL	DESCRIPTION
10	2	PL	1" THK. "B" CHILL RING
9	4	PL	1" THK. "A" CHILL RING
8	1	PL	1" THK. "C" CHILL RING
7	1	PL	1" THK. "D" CHILL RING
6	1	PL	1" THK. "E" CHILL RING
5	1	PL	1" THK. "F" CHILL RING
4	1	PL	1" THK. "G" CHILL RING
3	1	PL	1" THK. "H" CHILL RING
2	1	PL	1" THK. "J" CHILL RING
1	1	PL	1" THK. "K" CHILL RING

SEE SK-412 FOR CHILL RING DETAILS

CERTIFIED WELD PROCEDURE

BETH. STEEL CORP.	DWG. NO. 48	M-4639-37-09-11
SHIPBUILDING	SKC NO. 17-68	SERVICE Ann Arbor
SPARROWS PT., MD.	JOB NO. 371	DRAWING Sht. 13 OF 24

NO.	QUANT	MATL	DESCRIPTION
5	1	PL	1" THK. "A" CHILL RING
6	2	PL	1" THK. "B" CHILL RING
7	1	PL	1" THK. "C" CHILL RING
8	2	PL	1" THK. "D" CHILL RING
9	1	PL	1" THK. "E" CHILL RING
10	1	PL	1" THK. "F" CHILL RING
11	1	PL	1" THK. "G" CHILL RING
12	1	PL	1" THK. "H" CHILL RING
13	1	PL	1" THK. "J" CHILL RING
14	1	PL	1" THK. "K" CHILL RING

SEE SK-412 FOR CHILL RING DETAILS

CERTIFIED WELD PROCEDURE

BETH. STEEL CORP.	DWG. NO. 48	M-4639-37-09-11
SHIPBUILDING	SKC NO. 17-68	SERVICE Ann Arbor
SPARROWS PT., MD.	JOB NO. 371	DRAWING Sht. 14 OF 24

NO.	QUANT	MATL	DESCRIPTION
1	—	PL	1" THK. "A" CHILL RING
2	—	PL	1" THK. "B" CHILL RING
3	—	PL	1" THK. "C" CHILL RING
4	—	PL	1" THK. "D" CHILL RING
5	—	PL	1" THK. "E" CHILL RING
6	—	PL	1" THK. "F" CHILL RING
7	—	PL	1" THK. "G" CHILL RING
8	—	PL	1" THK. "H" CHILL RING
9	—	PL	1" THK. "J" CHILL RING
10	—	PL	1" THK. "K" CHILL RING

SEE SK-412 FOR CHILL RING DETAILS

CERTIFIED WELD PROCEDURE

BETH. STEEL CORP.	DWG. NO. 48	M-4639-37-09-11
SHIPBUILDING	SKC NO. 17-68	SERVICE Ann Arbor
SPARROWS PT., MD.	JOB NO. 371	DRAWING Sht. 15 OF 24

NO.	QUANT	MATL	DESCRIPTION
1	—	PL	1" THK. "A" CHILL RING
2	—	PL	1" THK. "B" CHILL RING
3	—	PL	1" THK. "C" CHILL RING
4	—	PL	1" THK. "D" CHILL RING
5	—	PL	1" THK. "E" CHILL RING
6	—	PL	1" THK. "F" CHILL RING
7	—	PL	1" THK. "G" CHILL RING
8	—	PL	1" THK. "H" CHILL RING
9	—	PL	1" THK. "J" CHILL RING
10	—	PL	1" THK. "K" CHILL RING

SEE SK-412 FOR CHILL RING DETAILS

CERTIFIED WELD PROCEDURE

BETH. STEEL CORP.	DWG. NO. 48	M-4639-37-09-11
SHIPBUILDING	SKC NO. 17-68	SERVICE Ann Arbor
SPARROWS PT., MD.	JOB NO. 371	DRAWING Sht. 16 OF 24

M-4639-371-09-11
Sh. 27 Rev. 4
M-432 Sht. 25, 26, 27, 28
H 4639-4640

BETHLEHEM STEEL CORP. JULY 1974
6X

NO	QUAN	MATL	DESCRIPTION
1	1	PL 5/8"	5/8" PL @ 22'-0"
2	1	W12x65	W12x65 @ 22'-0"
3	1	PIPE	8" SCH 80 PIPE (See Note)
4	—	PIPE	8" SCH 80 PIPE (See Note)

Certified Mill
EF-586

M-4639-371-09-11

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 80
JOB NO. 371
SERVICE Plate Structural
DRAWN PM CHECKED SMF

SHT.

NO	QUAN	MATL	DESCRIPTION
1	1	PL 5/8"	5/8" PL @ 22'-0"
2	1	W12x65	W12x65 @ 22'-0"
3	1	PIPE	8" SCH 80 PIPE (See Note)
4	—	PIPE	8" SCH 80 PIPE (See Note)

Certified Mill
EF-586

M-4639-371-09-11

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 80
JOB NO. 371
SERVICE Plate Structural
DRAWN PM CHECKED SMF

SHT.

NO	QUAN	MATL	DESCRIPTION
1	1	PIPE	8" SCH 40 8mm STL. PIPE
2	1	PIPE	6" TYPE 'A' CHILL RING
3	1	PIPE	6" TYPE 'A' CHILL RING
4	1	PIPE	6" SCH 40 8mm STL. PIPE
5	1	PIPE	8" SCH 40 8mm STL. PIPE
6	1	PIPE	6" TYPE 'A' CHILL RING
7	1	PIPE	6" TYPE 'A' CHILL RING

Certified Mill
EF-586

M-4639-371-09-11

BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 82
JOB NO. 371
SERVICE Pipe Structural
DRAWN PM CHECKED SMF

SHT.

NO	QUAN	MATL	DESCRIPTION
1	1	PIPE	8" SCH 40 8mm STL. PIPE
2	1	PIPE	6" TYPE 'A' CHILL RING
3	1	PIPE	6" TYPE 'A' CHILL RING
4	1	PIPE	6" SCH 40 8mm STL. PIPE
5	1	PIPE	8" SCH 40 8mm STL. PIPE
6	2	PIPE	6" TYPE 'A' CHILL RING
7	1	PIPE	8" SCH 40 8mm STL. PIPE

Certified Mill
EF-586

M-4639-371-09-11

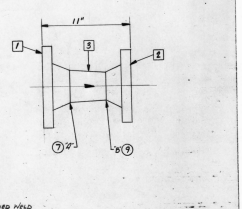
BETH. STEEL CORP. SHIPBUILDING SPARROWS PT., MD.

DWG. NO. 82
JOB NO. 371
SERVICE Pipe Structural
DRAWN PM CHECKED SMF

SHT.

MK NO	AMT	MATL	DESCRIPTION
1	1	A36 PLATE	4"-300# MIN. FLG. (ITEM #6)
2	1	A36 PLATE	33"-300# MIN. FLG. (ITEM #7)
3	1	A234 GR WPB	4"x33" SCH. 40 SEAML. WELD BEND (S-283)

MK NO	AMT	MATL	DESCRIPTION
7	1	A53 GR B SMLS	4" TYPE "A" CHILL RING
8	1	A53 GR B SMLS	2½" TYPE "B" CHILL RING



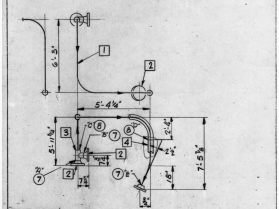
CERTIFIED WELD EF-856

M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 56	HULLS 4639 4640	
SHIPBUILDING	SK. NO. 27-56	SERVICE Aux. STEAM	ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN/PM/AS SH. 30 OF	0

MK NO	AMT	MATL	DESCRIPTION
1	1	A53 GR B SMLS	6"-SCH 40 SEAML. STL. PIPE
2	3	A53 GR B	4"-300# MIN. FLG. (ITEM #6)
3	1	A234 GR WPB	4"-SCH 40 WELD TEE (S-238)
4	5-0	A53 GR B	4"-SCH 40 SEAML. STL. PIPE

MK NO	AMT	MATL	DESCRIPTION
7	3	A53 GR B SMLS	4" TYPE "A" CHILL RING
8	2	A53 GR B SMLS	4" TYPE "B" CHILL RING



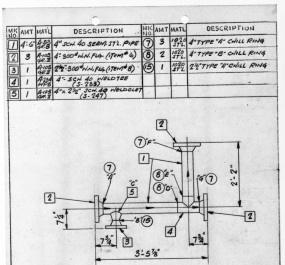
CERTIFIED WELD EF-858

M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 58	HULLS 4639 4640	
SHIPBUILDING	SK. NO. 27-58	SERVICE Aux. STEAM	ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN/PM/AS SH. 31 OF	0

MK NO	AMT	MATL	DESCRIPTION
1	6'-6"	A53 GR B SMLS	8"-SCH 40 SEAML. STL. PIPE
2	5	A105	4"-300# MIN. FLG. (ITEM #6)
3	1	A234 GR WPB	4"-300# MIN. FLG. (ITEM #8)
4	1	A234 GR WPB	4"-45° LR ELBOW (S-236)
5	1	A105	4"x 2½" SCH 80 REDUCER (S-367)

MK NO	AMT	MATL	DESCRIPTION
7	3	A53 GR B SMLS	4" TYPE "A" CHILL RING
8	2	A53 GR B SMLS	2½" TYPE "B" CHILL RING
9	1	A53 GR B SMLS	2½" TYPE "B" CHILL RING



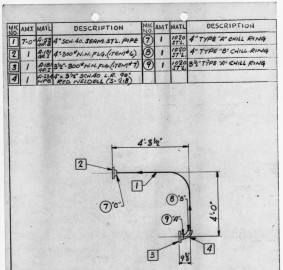
CERTIFIED WELD EF-850

M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 55	HULLS 4639 4640	
SHIPBUILDING	SK. NO. 27-55	SERVICE Aux. STEAM	ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN/PM/AS SH. 29 OF	0

MK NO	AMT	MATL	DESCRIPTION
1	7'-0"	A53 GR B SMLS	4"-SCH 40 SEAML. STL. PIPE
2	1	A105	4"-300# MIN. FLG. (ITEM #6)
3	1	A234 GR WPB	4"-45° LR ELBOW (S-236)
4	1	A105	4"x3"-SCH. 40 WELD REDUCER (S-368)

MK NO	AMT	MATL	DESCRIPTION
7	1	A53 GR B SMLS	4" TYPE "A" CHILL RING
8	1	A53 GR B SMLS	2½" TYPE "B" CHILL RING
9	1	A53 GR B SMLS	2½" TYPE "B" CHILL RING



CERTIFIED WELD EF-855

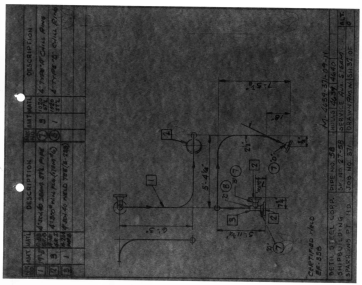
M-4639-371-09-11

BETH. STEEL CORP.	PIPE NO. 57	HULLS 4639 4640	
SHIPBUILDING	SK. NO. 27-57	SERVICE Aux. STEAM	ALT.
SPARROWS PT. MD	JOB NO. 371	DRAWN/PM/AS SH. 31 OF	0

M-4639-371-09-11
Sys. 27 Alt. 9
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 Sht. 29, 30, 31, 32
6X

M-H639-371-09-11
Sys. 27 ALT. 4
M-432 Sht 32

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640 6X



M-4639-371-09-11
Sh. 27 REV. 4
M-432 Sht. 33, 34, 35, 36 H 4639-4640

BETHLEHEM STEEL CORP. JULY 1974

6X

NO.	QUANT.	MARK	DESCRIPTION
1	4	4639	8"SCH 40 20mm STL. PIPE
2	1	4639	8"SCH 40 20mm STL. PIPE
3	1	4639	8"SCH 40 20mm STL. PIPE
4	1	4639	8"SCH 40 20mm STL. PIPE
5	1	4639	4"SCH 40 10mm STL. PIPE
6	1	4639	4" PIPE ELL. 90° LRS
7	1	4639	4" PIPE ELL. 90° LRS
8	1	4639	4" SCH 40 10mm STL. PIPE

CENTERED AREA
EP-558

BETH. STEEL CORP.
SHIPBUILDING
DRAWINGS BY: H.D.

DWG. NO. 4639-371-09-11
SERVICE AREA STEAM
DRAWING NO. 371

DWG. NO. 4639-371-09-11
INSULATION SPEC. 4639
DRAWING NO. 371

A/E
T

NO.	QUANT.	MARK	DESCRIPTION
1	1	4639	8"SCH 40 20mm STL. PIPE
2	1	4639	8"SCH 40 20mm STL. PIPE
3	1	4639	8"SCH 40 20mm STL. PIPE
4	1	4639	8"SCH 40 20mm STL. PIPE
5	1	4639	4"SCH 40 10mm STL. PIPE
6	1	4639	4" PIPE ELL. 90° LRS
7	1	4639	4" PIPE ELL. 90° LRS
8	1	4639	4" SCH 40 10mm STL. PIPE

CENTERED AREA
EP-558

BETH. STEEL CORP.
SHIPBUILDING
DRAWINGS BY: H.D.

DWG. NO. 4639-371-09-11
INSULATION SPEC. 4639
DRAWING NO. 371

A/E
T

NO.	QUANT.	MARK	DESCRIPTION
1	1	4639	8"SCH 40 20mm STL. PIPE
2	1	4639	8"SCH 40 20mm STL. PIPE
3	1	4639	8"SCH 40 20mm STL. PIPE
4	1	4639	8"SCH 40 20mm STL. PIPE
5	1	4639	4"SCH 40 10mm STL. PIPE
6	1	4639	4" PIPE ELL. 90° LRS
7	1	4639	4" PIPE ELL. 90° LRS
8	1	4639	4" SCH 40 10mm STL. PIPE

CENTERED AREA
EP-558

BETH. STEEL CORP.
SHIPBUILDING
DRAWINGS BY: H.D.

DWG. NO. 4639-371-09-11
INSULATION SPEC. 4639
DRAWING NO. 371

A/E
T

NO.	QUANT.	MARK	DESCRIPTION
1	1	4639	8"SCH 40 20mm STL. PIPE
2	1	4639	8"SCH 40 20mm STL. PIPE
3	1	4639	8"SCH 40 20mm STL. PIPE
4	1	4639	8"SCH 40 20mm STL. PIPE
5	1	4639	4"SCH 40 10mm STL. PIPE
6	1	4639	4" PIPE ELL. 90° LRS
7	1	4639	4" PIPE ELL. 90° LRS
8	1	4639	4" SCH 40 10mm STL. PIPE

CENTERED AREA
EP-558

BETH. STEEL CORP.
SHIPBUILDING
DRAWINGS BY: H.D.

DWG. NO. 4639-371-09-11
INSULATION SPEC. 4639
DRAWING NO. 371

A/E
T

111-H4639-5710411
Sht 27 Alt 4
M-4682 Sht 35, 36, 39, 40
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

M-4639-571-09-11
Sh. 27 REF. #
M-4632 Sht. 41, 42, 43
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
6X

NO.	MAT	WT/L	DESCRIPTION	NO.	MAT	MAT.
1	A514-E	1"	3'-0" x 6'-0" x 1'-0" PAD	(2)	1	EST.
2			8" Heat Bumps Each Face (TYP.)			
3			8" Bumps Each Face (TYP.)			
4			8" Bumps Each Face (TYP.)			
5			8" Bumps Each Face (TYP.)			

Centered Hub
EF-188

M-4639-571-09-11
BETH. STEEL CORP. | DWG. NO. 78F-1 | M-4639-571-09-11
SHIPBUILDING | SKETCH No. 27-78F | SKETCH No. 3 Sheets | ALT.
SPARROWS PT., MD. | CON. NO. 971 | DRAWN/APPD. 5/1/78 | SHT. 1 OF 3 | 4

NO.	MAT	WT/L	DESCRIPTION	NO.	MAT	MAT.
1	A514-E	1"	3'-0" x 6'-0" x 1'-0" PAD	(2)	1	EST.
2	2	3/4"	3/4" Bar Anch. Rods (TYP.)	(8)		

Centered Hub
EF-188

M-4639-571-09-11
BETH. STEEL CORP. | DWG. NO. 78F-1 | M-4639-571-09-11
SHIPBUILDING | SKETCH No. 27-78F | SKETCH No. 3 Sheets | ALT.
SPARROWS PT., MD. | CON. NO. 971 | DRAWN/APPD. 5/1/78 | SHT. 2 OF 3 | 4

NO.	MAT	WT/L	DESCRIPTION	NO.	MAT	MAT.
1	A514-E	1"	3'-0" x 6'-0" x 1'-0" PAD	(2)	2	EST.
2			3/4" Bar Anch. Rods (TYP.)	(8)		
3			8" Bumps Each Face (TYP.)			
4			8" Bumps Each Face (TYP.)			
5			8" Bumps Each Face (TYP.)			

Centered Hub
EF-188

M-4639-571-09-11
BETH. STEEL CORP. | DWG. NO. 78F-1 | M-4639-571-09-11
SHIPBUILDING | SKETCH No. 27-78F | SKETCH No. 3 Sheets | ALT.
SPARROWS PT., MD. | CON. NO. 971 | DRAWN/APPD. 5/1/78 | SHT. 3 OF 3 | 4

...E	REMARKS	MATERIAL SPECS.	REQ. NO.	REQ. NO.
...PS DISCH.		A.S.T.M.A234 W.P.A.	39380-B	
...PS DISCH.		A.S.T.M.A234 W.P.A.		
...PS DISCH.		A.S.T.M.A234 W.P.A.		
...PS DISCH.		A.S.T.M.A234 W.P.A.	39380-B	
...PS DISCH.		A.S.T.M.A234 W.P.A.		
...PS DISCH.		A.S.T.M.A234 W.P.A.	39380-B	
			39-84-1276	
		A.S.T.M.A234 W.P.A.	39380-B	
		A.S.T.M.A234 W.P.A.		
...PS DISCH.		A.S.T.M.A105 GRADE I	UAO	
...CIRC LINE		A.S.T.M.A105 GRADE I		
...FOR ...D.STM 142		A.S.T.M.A105 GRADE I		
...UP		A.S.T.M.A105 GRADE I		
...S SUCTION		A.S.T.M.A234 W.P.A.	39-84-1276	
...PS SUCTION				
...PS SUCTION	SUPPLIED BY PUG. PACIFIC PUMP INC. NO.TB-516	—	—	—
...PS SUCTION		A.S.T.M.A234 W.P.A.	39380-B	39380-N
...INLET ...ATOR				
...DEAERAT. ...TK. SUCT.			39-84-1276	
...STAGE ...R				
...M COND.			39380-B	
...FEED ...CH.				
...PUMPS		A216 GR. WCB	39380-F	
...PUMPS		A.S.T.M-A234 W.P.A.	39380-B	
...SATE ...TION	SEE GEN. NOTE NO. 11		39554	
...PUMPS	2ND. STG. FEED HTR. TO DRAIN REGUL. VAL.	ASTM-A-234 W.P.A.	39-84-1276	
...UMPS	1ST. STG. FEED HTR. TO DRAIN REGUL. VAL.		39380-B	
...PUMPS ...EJECTOR			39-84-1276	
...MPS. RE- ...DEAERAT.				
...RS. ...AUX. COND.	MAIN FEED PUMPS RELIEF VAL. DISCH.			
...PUMP ...E			39380-B	
...PUMP ...E			39-84-1276	
...D HTR. ...UL. VAL.			39380-B	
...D HTR. ...UL. VAL.			39-84-1276	
...EED HTR ...UL. VAL.			39380-B	
...& TRANS. ...N	CONT. EVAPOR. SURFACE BLOW OVERBOARD		39380-B	
...BOTTOM ...ARD			39380-B	
...SURFACE & ...VERBD.			39380-B	
...WS		A.S.T.M. A-105 GRADE II	39381-A	
...WS			39381-A	
...PIPING		—	—	—
...PIPING		—	—	—
...R. BLOW ...OARD		—	—	—
...OVERFLOW		—	UAO	
...D ..."A"				
...TKS. ...E	STNS. STL. SCREENS W/ .067 PERF.	A.S.T.M. A216-47T-GR.WCB	393811-A	
...RECIRC.		A.S.T.M. A216 47T-GR.WCB		
...RECIRC.		A.S.T.M. A216 47T-GR.WCB.		
...D. HTR. ...LVE		A.S.T.M. A 216-47T-GR.WCB		
...CAL FEED	*		* UAO	
...AL FEED				
...PUMP ...TING		A.S.T.M. A-105 GRADE II	39-84-1276	
...AIN		A.S.T.M. A-105 GRADE II	39381-A	
...OWS ...RD			39-84-1276	
...OWS ...RD				
...& ...DISCH.				
...D & ...DISCH.			39-84-1276	
...& ...DISCH.				
...D & ...DISCH				
...ISCH. ...OILERS		A.S.T.M. A-105 GRADE II		
		A-53 GRA ERW	UAO	
		A53-OHFW		
		AISI C-1015		
		A-53 GRA ERW		
		A-53 GRA ERW		
		AISI C1015		
		AISI C1015		

LIST OF VALVES

ALT. NO.	VALVE NO.	AMT.	SIZE	PRESS	MATERIAL	DESCRIPTION	CAT. OR DWG. NO.	SERVICE	REMARKS	MATERIAL SPECS.	REQ. NO.	REQ. NO.
	W-1 / W-1A	1 / 1	6"	900#	CAST STEEL STAIN. STL. MTD.	FLG'D. ANGLE STOP-CHECK VALVE - SLEEVE-GUIDED, NON-CHATTERING TYPE, F.&D.	EDWARDS FIG.-4007-MOD.		SPUR GEAR OPERATED (1) FITT. WITH LIMIT SWITCH	A-216-WC-8	39550	
	W-2 / W-2A	1 / 1	6"	900#	CAST STEEL STAIN. STL. MTD.	FLG'D. ANGLE STOP-CHECK VALVE - SLEEVE-GUIDED, NON-CHATTERING TYPE, F.&D.	EDWARDS FIG.-4007-MOD.		SPUR GEAR OPERATED (1) FITT. WITH LIMIT SWITCH	A-216-WC-8		
	W-3	4	4"	900#	CAST STEEL STAIN. STL. MTD.	FLG'D. GLOBE STOP-CHECK VALVE - SLEEVE-GUIDED, NON-CHATTERING TYPE, F.&D.	EDWARDS FIG. 4006			A-216-WC-8		
	W-4 / W-4-A	8 / 2	4"	900#	CAST STEEL STAIN. STL. MTD.	FLG'D. GLOBE VALVE, F.&D.	EDWARDS FIG. 4016		W-4-A MOTOR OPERATED	A-216-WC-8		
	W-5	2	4"	900#	CAST STEEL STAIN. STL. MTD.	FLG'D. ANGLE LIFT CHECK VALVE - SLEEVE-GUIDED, NON-CHATTERING TYPE F.&D.	EDWARDS FIG. 4095			A-216-WC-8		
	W-6	2	2½"	150#	CAST STEEL STAIN. STL. MTD.	FLG'D. GLOBE STOP-CHECK VALVE F.&D.	POWELL FIG. NO. 1535-F.E.	MAIN FEED PUMPS RECIRC. LINE TO DEAERA.		A.S.T.M.A-105 GRADE II		
	W-7	6	½"	1500#	FORGED STEEL STAIN. STL. MTD.	FLG'D. GLOBE VALVE F.&D.	EDWARDS FIG. 1028					
	W-8	2	¾"	1500#	FORGED STEEL STAIN. STL. MTD.	FLG'D. GLOBE VALVE F.&D.	EDWARDS FIG. 1028					
	W-9	2	8"	150#	CAST STEEL STAIN. STL. MTD.	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. - RISING STEM	POWELL FIG. 1503 MOD.		MOTOR OPERATED	A-216-WC-8		
	W-10	2	1¼"	1500#	FORGED STEEL STAIN. STL. MTD.	FLG'D. GLOBE STOP-CHECK VALVE F.&D.	EDWARDS FIG. 1046			A.S.T.M.A-105 GRADE II	39550	
	W-11	1	1¼"	1500#	FORGED STEEL STAIN. STL. MTD.	FLG'D. GLOBE STOP-CHECK VALVE F.&D.	EDWARDS FIG. 1046			A.S.T.M.A-105 GRADE II		
	W-12	3	1"	600#	FORGED STEEL STAIN. STL. MTD.	FLG'D. GLOBE VALVE F.&D.	EDWARDS FIG. 828					
	W-13	1	1¼"	1500#	FORGED STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC GATE VALVE F.&D. O.S.&Y - RISING STEM	VELAN ENG. CO. FIG. F-354-B					
	W-14	1	½"	1500#	FORGED STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC GATE VALVE F.&D. O.S.&Y - RISING STEM	VELAN ENG. CO. FIG. F-354-B					
	W-15	2	1"	600#	FORGED STEEL STAIN. STL. TRIM	FLG'D. ANGLE VALVE F.&D. STELLITED SEATS & DISC - BOLTED BONNETS	EDWARDS FIG. 829					
	W-16	1	1½"	150#	FORGED STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y - RISING STEM	POWELL, FIG. 1503-FE					
	W-17	2	10"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y - RISING STEM	POWELL FIG. 1503-F.E.		LIMIT SWITCH	A-216 WC-8		
	W-18	2	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y - RISING STEM	POWELL FIG. 1503-F.E.		LIMIT SWITCH			
	W-19	2	6"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. ANGLE STOP-CHECK VALVE - SLEEVE-GUIDED, NON-CHATTERING TYPE, F.&D.	POWELL FIG. 1578-MOD.		LIMIT SWITCH			
	W-20	2	2½"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE STOP-CHECK VALVE - SLEEVE GUIDED, NON-CHATTERING TYPE, F.&D.	POWELL FIG. 1576-MOD.		LIMIT SWITCH		39550	
	W-21	3	6"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y - RISING STEM	POWELL FIG. 1503-F.E.					
	W-22	1	5"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y - RISING STEM	POWELL FIG. 1503-F.E.					
	W-23	1	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y - RISING STEM	POWELL FIG. 1503-F.E.					
	W-24	2	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE, F.&D., O.S.&Y - RISING STEM	POWELL FIG. 1503-F.E.					
	W-25	2	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. - RISING STEM	POWELL FIG. 1503-F.E.					
	W-26	1	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. - RISING STEM	POWELL FIG. 1503-F.E.					
	W-27	3	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	POWELL FIG. 1531-F.E.					
	W-28	1	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	POWELL FIG. 1531-F.E.					
	W-29A	2	3"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	POWELL FIG. 1531-F.E.		MOTOR OPERATED			
	W-30	1	2½"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	POWELL FIG. 1531-F.E.				39550	
	W-31	1	2½"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. - RISING STEM	POWELL FIG. 1503-F.E.					
	W-32	2	2"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. - RISING STEM	POWELL FIG. 1503-F.E.					
	W-33	2	2"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	POWELL FIG. 1531-F.E.					
	W-34	1	2½"	300#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	HANCOCK, TYPE 5335-F	1ST. STAGE FEED HTR. DRAIN DISCH. TO COND.	CLOSE ADJ. TYPE			
	W-35	2	6"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. RISING STEM	POWELL FIG. 1503-F.E.					
	W-36	1	6"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	POWELL FIG. 1531-F.E.					
	W-37	4	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. RISING STEM	POWELL FIG. 1503-F.E.					
	W-38	1	4"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE, F.&D.	POWELL FIG. 1531-F.E.					
	W-39	3	6"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. RISING STEM	POWELL FIG. 1503-F.E.		FITTED FOR LOCK			
	W-40	2	5"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. RISING STEM	POWELL FIG. 1503-F.E.		FITTED FOR LOCK		39550	
	W-41	4	2½"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. RISING STEM	POWELL FIG. 1503-F.E.		TRANSFERED TO STEAM & FRESH WATER DRAINS			
	W-42	1	2½"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	POWELL FIG. 1531-F.E.		TRANSFERED TO STEAM & FRESHWATER DRAINS			
	W-43	1	2"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. GLOBE VALVE, F.&D.	POWELL FIG. 1531-F.E.	DRAIN FROM DEAERATOR				
	W-44	1	10"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. RISING STEM	POWELL FIG. 1503-F.E.		FITTED FOR LOCK			
	W-45	2	2"	150#	CAST STEEL STAIN. STL. TRIM	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. O.S.&Y. - RISING STEM	POWELL FIG. 1503-F.E.					
	W-46	2	1¼"	150#	BRONZE BRONZE MTD.	FLG'D. SOLID WEDGE DISC, GATE VALVE F.&D. UNION BONNET - RISING STEM	POWELL FIG. 3765			A.S.T.M. B-61		
	W-47	3	1"	150#	BRONZE BRONZE MTD.	FLG'D. GLOBE VALVE F.&D. UNION BONNET	POWELL FIG. 111				39550	
	W-48	1	3"	300#	CAST STEEL STAIN. STL. TRIM	FLG'D. VERTICAL, LIFT CHECK VALVE, F.&D.	POWELL FIG. 3069			A-216 WC-8		
	W-49	2	¼"	600#	FORGED STEEL STAIN. STL. TRIM	SCR'D. GLOBE VALVE, STELLITED SEATS & DISCS - SEATS INTEGRAL OR WELDEDIN BOLTED BONNETS	EDWARDS FIG. 848			A.S.T.M. A-105 GRADE II		
	W-50	2	¾"	200#	BRONZE MONEL TRIM	GLOBE VALVE WITH SILBRAZING UNION ENDS, UNION BONNET	LUNKENHEIMER FIG. 2100			A.S.T.M. B-61		
	W-51	12	½"	200#	BRONZE BRONZE MTD.	SCR'D. GLOBE VALVE - UNION BONNET.	POWELL FIG. 110				SUP. SHT. 39-84-1276	
	W-52	6	⅜"	200#	BRONZE BRONZE MTD.	SCR'D. GLOBE VALVE - UNION BONNET.	POWELL FIG. 110					
2	W-53	5	¼"	200#	BRONZE BRONZE MTD.	SCR'D. GLOBE VALVE - UNION BONNET.	POWELL FIG. 110					
	W-54	2	½"	1500#	FORGED STEEL STAIN. STL. TRIM	FLG'D. GLOBE STOP-CHECK VALVE F.&D.	EDWARDS FIG. 1046	BOILER LAY-UP		A.S.T.M. A-105 GRADE II	39550	
	W-55	2	¾"	200#	BRONZE BRONZE MTD.	SCR'D. GLOBE VALVE - UNION BONNET	POWELL FIG. 110	(1) BOILER LAY-UP (1) VENT 2ND FEED HTR.		A.S.T.M. B-61	SUP. SHT. 39-84-1276	

FOR CONT. SEE PANEL #7

LIST OF STUDS

ALT. NO.	ITEM NO.	AMT. REQ'D	PIPE SIZE	PRESS	MAX. TEMP.	STUD DIA.	STUD LGTH.	MATERIAL	SERVICE	REMARKS	REQ. NO.	REQ. NO.
	1	216	6"	900#	282°	1⅛"	7½"	MOLYBDENUM STEEL	FEED TO BOILERS		SUP. SHT. 39-84-1276	
	2	320	4"		380°	1⅛"	6½"		FEED AT BOILERS		39384	
	3	32	3"		282°	⅞"	5½"		FEED TO BOILERS		39-84-1276	
	4	16	2"		282°	⅞"	5½"		FEED PUMPS RELIEF VALVE			
	5	64	1½"			1"	5¼"				39382	
	6	36	1"			⅞"	4¾"					
	7	64	¾"			¾"	4¼"					
	8	88	½"			¾"	4"				39-84-1276	
	9	40	1¼"	900#		⅞"	4¾"				39384	
	10	48	1"	600#		⅝"	3½"				39-84-1276	

3 2 1

GENERAL NOTES

1. ALL MATERIAL TO MEET THE REQUIREMENTS OF THE U.S. COAST GUARD & AMERICAN BUREAU OF SHIPPING.
2. ALL MATERIAL TO BE MANUFACTURERS STD. OR EQUAL.
3. STUD MATERIAL TO BE CARBON MOLYBDENUM STEEL A.S.T.M. A-193-52 T - GRADE B-7.
4. STUDS SHALL BE DOUBLE END WITH CONTINUOUS THREADS.
5. LENGTHS GIVEN ARE LENGTHS OF THREADS & DO NOT INCLUDE CROWNED ENDS.
6. STUDS ARE TO BE STAMPED ON ONE END WITH IDENTIFICATION MARKS IN ACCORDANCE WITH PAUL FIELDS LETTER DATED 5-24-43.
7. TWO (2) AMERICAN STD. HEAVY HEX. NUTS TO BE FURNISHED WITH EACH STUD.
8. NUT MATERIAL TO BE A.S.T.M. A-194-53 CLASS 2H.
9. DOUBLE ENDED STUDS & NUTS ARE TO HAVE AMERICAN STD. COARSE THREADS
10. ALL PIPES TO BE SUBJECT TO AN INSTALLED HYDROSTATIC TEST AT PRESSURES SHOWN IN PIPE LIST AND WITNESSED BY REPRESENTATIVES OF REGULATORY BODIES AS REQ'D.
11. EXPANSION JOINTS TO BE RE-INFORCED WITH WIRE BRAID, POLYESTER, OR FABRIC MATERIAL. THE COVER MATERIAL SHALL BE JUDGED SELF-EXTINGUISHING BY TEST METHOD ASTM D-1692 & DESIGNED FOR A BURSTING PRESSURE OF NOT LESS THAN FOUR (4) TIMES THE MAXIMUM ALLOWABLE PRESSURE.
12. (8) VALVES TO BE FURNISHED WITH WORCESTER MODEL 34S PNEUMATIC ACTUATOR ARRANGED NORMALLY OPEN, COMPLETE WITH TWO (2) LIMIT SWITCHES (OPEN & CLOSE) - SPDT AND 24 VDC SOLENOID; ENERGIZE SOLENOID TO CLOSE - SPRING RETURN TO OPEN; (JOBE & CO., INC.)

UAO-39112

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1			THIS PLAN IS A DUPLICATE OF PLAN NO. M-4622-372-11-3 REV. 8 PREVIOUSLY APPROVED BY MATSON NAVIGATION CO. AND APPLICABLE REGULATORY BODIES AND IS IDENTICAL THERETO EXCEPT AS FOLLOWS: REVISED TO SUIT ALT. 1 ON DRWGS. M-4639-372-11-1 & 2.		G.G. SHARP LETTER DATED 5-28-71
2	7-7-71		VALVE W-53 QUANT. INCRD. FROM 3 TO 5. VALVE W-70 QUANT. INCRD. FROM 1 TO 2. FITTING W-197 QUANT. INCRD. FROM 6 TO 8. FITTING W-200 QUANT. INCRD. FROM 4 TO 10. FITTING W-206 QUANT. INCRD. FROM 1 TO 3. FITTINGS W-170 & W-233 ADDED. REVISED TO SUIT ALT. 3 ON DRWG. M-4639-372-11-1	J.J.P. JR.	N.T.T. 7.21.71
3	10/8/71		ADDED OPTICAL DETAIL MARK NOS. AND REVISED DESCRIPTION OF SOLENOID VALVE W-63 TO SUIT LATEST DEVELOPMENT	J.E.H.	N.T.T. 10.12.71
4	11/4/71		1. AT FITTING LIST, REVISED QUANTITY OF FITTING NO. W-116 FROM 1 TO 2 PER YIS 4639-22-10 2. AT FITTING LIST: ADDED FITTINGS NOS. W-234 & W-235 REVISED QTY. FITTING W-178 FROM 1 TO 10 REVISED QTY. FITTING W-179 FROM 5 TO 8 3. AT FLANGE LIST: ADDED FLANGES NOS. 34 & 35 REVISED QTY. FLANGE NO. 9 FROM 29 TO 30 REVISED QTY. FLANGE NO. 10 FROM 64 TO 65 REVISED QTY. FLANGE NO. 11 FROM 37 TO 39 REVISED QTY. FLANGE NO. 12 FROM 35 TO 34 REVISED QTY. FLANGE NO. 13 FROM 50 TO 52 REVISED LOCATION AND REMARKS FOR FLANGE NO. 26 TO READ BORE FOR SCH. 80 IN LIEU OF STD. PIPE. ITEMS 2 & 3 ABOVE TO SUIT LATEST DEVELOPMENT.	D.D.E.	W.W.R. 11/10/71
5	9/5/72		FITTING W-236 ADDED, TO SUIT ALT. 2 ON M-4639-372-11-4 ITEM NOS. 3 & 5 IN LIST OF FLANGES, REMARKS TO READ BORE FOR SCH. 160 IN LIEU OF 120 PIPE.	J.J.P. JR.	
6	11-9-72		ADDED FITTING NOS. W-237 & W-238 AS PER SCN #97 DATED OCT. 31, 1972	EJC	11-13-72 WCF
7	3-6-73		ITEM NO. 36 IN FLANGE LIST ADDED TO SUIT ALT. 10 ON M-4639-372-11-1.	J.J.P. JR.	3-21-73 WCF
8	6 28 73	7 1	1. IN B/M ADDED VALVE W-78 2. ADDED GEN. NOTE NO. 12 THE ABOVE REVISIONS MADE TO COMPLY WITH ALT. 9 REF. 2 THE ABOVE CHANGES MADE APPLICABLE FOR HULLS 4639 & 40.	G.R.E.	

NO.	PLAN NO.	TITLE
3	4639-372-11-4	DETAILS OF H.P. FEED PIPING.
2	4639-372-11-2	ARRG'T. OF FEED COND. & AIR EJECT PIPING - SECT. & ELEV.
1	4639-372-11-1	ARRG'T. OF FEED COND. & AIR EJECT PIPING - PLAN

REFERENCE PLANS

HULL	DESIGN	CHARGE
4640	34,700 DWT. CONTAINERSHIP	10-4639
4639	34,700 DWT. CONTAINERSHIP	10-4639

JOB NO. 372

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ~ DATE 4-27-71
DRAWN J.J.P. JR. APPROVED
TRACED APPROVED
CHECKED JEH APPROVED HBJR

PLAN NO. M-4639-372-11-3 ALT. NO. 8

ARR'G'T. OF FEED, CONDENSATE, AIR EJECTOR & BOILER BLOW PIPING - MATERIAL SCHEDULE

APPROVAL LETTERS					
HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	5-28-71				
A.B.S.	X				
U.S.C.G.	5-18-71				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

4639-40 / 4639-40 / 4639-40 REPL. / 4639-40 REPL. / 4639-40 REPL. / 4639-40 REPL. / 4639-40 REPL. / 4639-40 REPL. / 4640 REPL.

DATE OF ISSUE									
ALTERATION	1	1	2	3	4	5	6	7	8
ENGINEERING DISTRIBUTION	4-28-71	5-28-71	8-5-71	10-22-71	11-12-71	9-6-72	11-14-72	3-26-73	7-3-73
MAIL: OWNERS	1	4	6	5	4	4	2	4	4
AMERICAN BUREAU									
LLOYD'S R.S.									
U.S.M.A.									
U.S. NAVY									
U.S.C.G.	3		3		3				
JOINER CONT'R.									
INSPECTION: OWNER'S INSP.		1	1	1	1	1	1	1	
AM. BU. INSP.									
LLOYD'S INSP.									
U.S.M.A. INSP.		1	1	1	1	1	1	1	
U.S. NAVY INSP.									
U.S.C.G. INSP.									
OFFICE: HULL DRAFT. - 21	1		1	1	1	1	1	1	
MACH. DRAFT. - 22	1		1	1	1	1	1	1	
ELEC. DRAFT. - 23	1		1	1	1	1	1	1	
OUTFIT. DRAFT. - 25	1		1	1	1	1	1	1	
ESTIMATING									
MISC.: ROBERTS - SHIP SUPT.	1								
PRODUCTION (BCD)									
ORDER DEPT.									
JOINER CONT. YARD									
NELSON - PLANNING	2								
TOTAL ENG'R. DIST.	15	12	14	10	12	9	7	9	
YARD DISTRIBUTION	9-2-71	6-22-71	8-17-71	9-...-71	11-24-72	3-30-73	7-...-73		
PLAN'G.	1	1	1	1	1	1	1		
A. J. DALBY	3	3	3	3	3	9	3		
PIECE RATE - 11	1	1	1	1	1	1	1		
TEST DEPARTMENT	1	1	1	1	1	1	1		
STEEL PLANNING									
GROUND ASSEMBLY	4	4	4	2	2	2	2		
35 DEPT.	2	2	2	2	2	2	2		
STRUCTURAL: NO. WAY									
NO. WAY									
NO. WAY									
NO. WAY									
STRUCT. SUPER.	2	2	2	2	2	2	2		
OPTICAL DETAIL - 48	2	2	2	2	2	2	2		
WET DOCK									
MACH'Y & OUTFIT.: PIPE SHOP - 52	8	8	8	4	4	4	4		
OUTFIT. #1 PIER									
PIPE DRAFT. - 52	2	2	2	2	2	2	2		
BOILER SHOP - 58									
OUTSIDE MACH. - 60	1	1	1	1	1	1	1		
Q - MAT'L.			2	1	1	1	1		
ELECTRIC SHOP - 70									
SHEET MET. SHOP - 74	3	3	3	2	2	2	2		
COPPER SHOP - 51	3	3	3	2	2	2	2		
PAINT SHOP - 75	1	1	1	1	1	1	1		
OTHER: WELDING	1	1	1	1	1	1	1		
J. MINOR - TEST DEPT.				1	1	1	1		
MOLD LOFT - 41	1	1	1	1	1	1	1		
BRACKET SHOP									
ORDER DEPT. 10	1	1	1	1	1	1	1		
N. SMITH - ...				1	1	1	1		
TOTAL YARD DIST.	37	37	38	30	32	32	32		

4639-40 - ALT. 5 / 4639-40 - ALT. 6 / 4639-40 - ALT. 7 / 4639 - ALT. 8

M-449

25.0 SQ. FT.

F 1

M-4639-372-11-3 Sys. 32 ALT. 8

M-449

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

F 2

M-4639-372-11-3
Sys. 32 ALT. 8
M-449

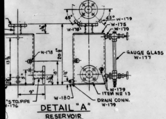
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

...T.

[NO.]	SERVICE	REMARKS	MATERIAL SPECS.	REQ. NO.	REQ. NO.
	1ST. STG. FEED WAT. HTR. DRAIN REGUL. VAL			—	—
	2ND. STG. FEED WAT. HTR. DRAIN REGUL. VAL.			—	—
	DEAER. SPILL VALVE TO DIST. FD. WAT. TKS.	FURN. WITH DEAER		—	—
ALVE 50	MAIN COND. RECIRC. VAL. TO MAIN COND.	WITH MODEL NO. 34 ACTUATOR		39550-D	—
	AUX. COND. RECIRC. VALVE			—	—
	EXT. DSPHTR. FOR EMERG. STM. TO L.P. TURBINE			—	—
	BOILER FEED CONTROL SYSTEM			—	—
41	BOILER BLOW	STRAIGHT WAY TYPE BOLTED BONNET	A.S.T.M. A-105 GRADE II	39550	
046	BOILER SURFACE BLOW				
028	BOILER SURFACE BLOW				
028	BOILER DRAIN				
1	BOILER BLOW	STRAIGHT WAY TYPE BOLTED BONNET			
5	CONTAM. EVAPOR. OVERBOARD DISCH.	BOLTED BONNET	A.S.T.M. A-105 GRADE II	39550	
F.E.	CONTAM. EVAPOR. SURFACE & BOTTOM BLOW	BOLTED BONNET			
-Y			B-61		
	EXT. DSPHTR FOR EMERG. DSPHTR STM.		A.S.T.M. A-105 GRADE II		
10	SEALING PIPE FOR T.G EXHAUST VALVES		B-61	39-84-1276	
			B-61		
				39550-A	
D	LUB OIL PURIFIER BOWL SEALING.		B-61	39-84-1276	
-Y	BY-PASS EMERG. FEED & TRANS. PUMP	BOLTED BONNET	ASTM A-105 GR. II	39550	
I-A			A216 GR WCB	39550-B	
I-A			A216 GR WCB		
-T-SE		SEE GEN. NOTE NO. 12		39590-N	

...NT.

NO.	SERVICE	REMARKS	MATERIAL SPECS.	REQ. NO.	REQ. NO.
ON	SEALING WATER TO TURBO-GENS EXH. VALVES			UAO	
	BOILERS WASHDOWN CONN.	FABRICATED SEE DETAIL "B"		UAO	
	BOILERS WASHDOWN CONN.		A-53 GR. B		
CO IO	BOILERS WASHDOWN CONN.	1" STD. NAT. PIPE THRD.	A.S.T.M. B-61		
	RESERVOIR FOR CONTROL VALVE	SEE DETAIL "A"	A-53 GRA ERW		
	"	"	A-36	*	
	"	"	A-53 OHFW		
A	"	"	A.S.T.M B-61		
	"	"	A181 GR I		(2) 39381-A (18) 39381-F
	"	"			(10) 39381-F (6) 39381-A
	"	"	B-62		
290	DEAER. SPILL VALVE TO DIST. FD. WAT. TKS.		A.S.T.M. A-234 W.P.A	39380-B	
	MAIN COND. RECIRC. VAL. TO MAIN COND.				
	AUX. COND. RECIRC. REGUL. VALVE.				
	SALINITY CELL MAIN & AUX. COND. PUMPS		ASTM A-105 GRADE II	39382-A	
	EMERG. FEED TO EXT. DESUPH'TR. STEAM		A.S.T.M. A-105 GRADE II	39381-A	
1SW	FEED WATER TO EXT. DESUPH'T'R.	.033" PERF. STAINLESS STEEL	A.S.T.M. A216 WCB.	393811-A	
100.	FEED WATER TO EXT. DESUPH'T'R.	ITEM NO 3 TO BE 5" LONG ITEM NO 5 & 6-9 REQ'D.		UAO	
	EMERG. FEED & TRANS PUMP TO BOILER COMP. TANK		A.S.T.M. A-105 GRADE II	39381-A	
	EMERG. FEED & TRANS PUMP PRESS. GAUGE	DRILL & TAP ¼ I.P.S. THRD. PRESS. GAUGE IN TOP	A.S.T.M. A-105 GRADE II		
	EMERG. FEED & TRANS PUMP TO BOILER WASHDOWN		A.S.T.M. A-105 GRADE II		
O	AUX AIR EJECTOR LOOP-SEAL TO AUX COND.			39-84-1276	
	BOILER LAY-UP		A.S.T.M. A-105 GRADE II	39381-A	
O	EXT. DSPHTR & BOILER WASHDOWN			39-84-1276	
	BOILER WASH DOWN	FOR SCH. 80 PIPE	ASTM. A-105 GRADE II	39-84-1276	
S	TEMP. SENSORS ELIMENT	SIM. TO EF-STD. EXCEPT LEN. "E" TO BE 2¼. "F" DIM. 13/16.	ASTM A-105 GRADE I	UAO	
			ASTM. A-105 GR. II	39-84-1276	



DETAIL "A"
RESERVOIR
FITTING NO. W-144
SCALE ÷ 1½"=1'-0"

7

LIST OF FLANGES

ALT. NO.	ITEM NO.	AMT. REQ'D	SIZE	TYPE	PRESS.	MATERIAL	LOCATION	REMARKS	MATERIAL SPECS.	MANUFACT.	REQ. NO.
	1	26	6"	WELDING NECK	900#	FORGED STEEL	1(2) 2(2) 3(3) 4(3) 5(2) 6(2) 7(2) 8(2) 9(2) 10(2) 11(2) 12-1(1) 22-1(1)	BORED FOR SCH.120 PIPE	A-105 CLASS II	TUBE TURN PT#36	39383-F
	2	40	4"				12(1) 12-1(2) 13(1) 14(2) 15(2) 16(2) 17(2) 18(3) 18-1(2) 19(3) 19-1(2) 20(2) 21(2) 22(3) 22-1(2) 23(3) 18-2(2) 19-2(2) 1(1) 2(1)				
5	3	4	3"				12(1) 13(1) 16(1) 17(1)	BORED FOR SCH.160 PIPE			
	4	11	1¼"	SOCKET WELDING	1500#	FORGED STEEL	180(7) 181(4)	BORED FOR SCH.80 PIPE		1558	39383-B
5	5	2	2"	SOCKET WELDING	1500#	FORGED STEEL	1(1) 2(1)	BORED FOR SCH.160 PIPE			39383-F
	6	15	10"	SLIP-ON WELDING	150#		24(2) 25(2) 26(2) 27(2) 28(2) 29(1) 34(4)		A-181 GRADE II	50	39383-B
	7	11	8"				29(2) 30(2) 31(2) 32(2) 33(2) 75(1)				
	8	64	6"				28(1) 35(4) 36(2) 37(1) 38(2) 39(2) 40(2) 41(2) 42(2) 43(2) 44(3) 45(2) 46(2) 47(3) 50(2) 52(2) 53(2) 54(2) 55(2) 56(2) 57(2) 58(2) 59(2) 60(2) 61(2) 62(2) 63(1) 76(1) 77(1) 78(3) 79(2) 79-1(2)				
4	9	30	5"				42(1) 44(1) 48(2) 49(2) 63(1) 80(2) 81(2) 82(1) 83(1) 84(1) 85(1) 86(3) 87(3) 88(2) 88-1(1) 89(1) 90(2) 65(1) 66(1) 45(1)				
4	10	65	4"				64(3) 65(1) 66(1) 73(2) 74(2) 75(2) 36(1) 37(1) 91-115(48) 122(1) 123(2) 45(1)				(28) 39383-B (6) 39383-N
4	11	39	3"				71(2) 72(2) 99(2) 115(1) 122(1) 152-162(19) 163(1) 164(1) 119(2) 120(3) 121(2) 128(1) 75(2)				39383-B
4	12	34	2½"	SOCKET WELDING			38(1) 67(2) 68(2) 69(2) 70(3) 70-1(1) 124-132(12) 150-1(2) 151-1(2) 150(2) 151(2) 152(2) 172(1)	BORE FOR SCH.40 PIPE (F.F.)		150	39383-B
4	13	52	2"				67(2) 92(1) 122(1) 124(1) 128(1) 129(1) 133-149(33) 175(1) 186(1) 187(1) 201(2) 204(1) 205(1) W-144(2) 171(1) 70-1(1) 43(1)				(44) 39383-B (8) 39383-N
	14	11	1½"				79-1(1) 171(1) 172(1) 173(3) 174(1) 175(1) 176(2) 188(1)				39383-B
	15	6	1¼"				134(1) 135(1) 186(2) 187(2)				
	16	11	1"				147(2) 191(8) 201(1)				
	17	2	¾"				195(1) 184(1)	(1) BORE FOR SCH.40 (1) BORE FOR SCH.80			
	18	1	2"	BLIND	150#		DEAERATOR DRAIN F.F			70	39383-F
	19	1	9"x2"	SOCKET WELDING REDUCING	150#		137(1) F.F.	BORE FOR SCH.40 PIPE		150-MOD.	
	20	1	6"x1½"	SOCKET WELDING REDUCING	150#		174(1) F.F.	BORE FOR SCH.40 PIPE		150-MOD.	
	21	16	1½"	SOCKET WELDING	1500#	FORGED STEEL	165-168(12) 210(4)	BORE FOR EX.HVY.PIPE	A-105 CLASS II	1558	39383-B
	22	10	¾"	SOCKET WELDING	1500#	FORGED STEEL	169(8) 168(1) 166(1)				
	23	14	½"	SOCKET WELDING	1500#	FORGED STEEL	170(4) 207(4) 165(1) 167(1) 170(2) 196(2)				
	24	6	1"	SOCKET WELDING	600#	FORGED STEEL	W-171(2) 182(2) 184(2)	BORE FOR EX.HVY.PIPE	A-105 CLASS II	152	39383-B
	25	2	2½"		300#	FORGED STEEL	129(1) 130(1)	SCH.40	A-181 GRADE II	151	39383-F
4	26	2	2"		300#	FORGED STEEL	208(1), 209(1) F.F.	BORE FOR SCH.80 PIPE			39383-N
	27	8	½"	SOCKET WELDING	1500#	FORGED STEEL	18(1) 19(1) 14(1) 15(1) 177(4)	BORE FOR SCH.160 PIPE	A-105 CLASS II	1558	39383-F
	28	2	¾"	SOCKET WELDING	1500#	FORGED STEEL	20(1) 21(1)				
	29	2	6"x1¼"	SOCKET WELDING REDUCING	150#	FORGED STEEL	186(1) 187(1) F.F.	BORE FOR SCH. 40 PIPE	A-181 GRADE II	150-MOD.	
	30	2	½"	SOCKET WELDING	150#	FORGED STEEL	F.F.			150	39383-B
	31	13	1"	SOCKET WELDING	1500#	FORGED STEEL	182(3) 183(8) 184(2)	BORE FOR SCH.80 PIPE	A-105 CLASS II	1558	
	32	2	5"x1"	SOCKET WELDING REDUCING	150#	FORGED STEEL	192(2) F.F.	40	A-181 GRADE II	150-MOD.	39383-F
	33	2	3"	SLIP-ON WELDING	300#	FORGED STEEL	161(1) 162(1)		A-181 GRADE II	51	39383-B
4	34	2	2½"	SOCKET WELDING	150#	FORGED STEEL	208(1), 209(1)	BORE FOR SCH.80	A-181 GRADE II	150	
4	35	2	2"	SOCKET WELDING	150#	FORGED STEEL	208(1), 209(1)	BORE FOR SCH. 80	A-181, GRADE II	150	
7	36	1	6"x½"	S.W. REDUCING	150#	FORGED STEEL	202(1)	BORE FOR SCH.40 PIPE	A-181, GR. II	TUBE TURN 150 MOD.	39552

LIST OF GASKETS

ALT. NO.	ITEM NO.	AMT. REQ'D.	SIZE	TYPE	PRESS.	MATERIAL	SERVICE	MANUFACTURER	REMARKS	MATERIAL SPECS.	REQ. NO.	REQ. NO.
	1	18	6"	FLEXITALLIC STYLE "C-G"	900#	STAINLESS STEEL	MAIN & AUX. FEED TO BOILERS				39385-A	
	2	40	4"				MAIN & AUX. FEED TO BOILERS					
	3	4	3"				MAIN FEED PUMPS DISCHARGE					
	4	2	2"				MAIN FEED PUMPS RELIEF VALVES					
	5	16	1½"									
	6	9	1"									
	7	16	¾"									
	8	22	½"									
	9	15	10"	RING	150#	JOHNS MANSVILLE #60					39-84-1276	
	10	11	8"									
	11	49	6"									
	12	22	5"									
	13	28	4"									
	14	25	3"									
	15	30	2½"									
	16	33	2"									
	17	10	1½"									
	18	10	1¼"	FLEXITALLIC STYLE "C-G"	900#	STAINLESS STEEL					39385-A	
	19	12	1"		600#							
	20	4	1"		600#							
	21	2	3"		300#							
	22	2	2½"		300#							
	23	7	1¼"	RING	150#	JOHNS-MANSVILLE #60					39-84-1276	
	24	10	1"									
	25	3	¾"									
	26	2	½"									

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LIST OF FITTINGS

ALT. NO.	FITTING NO.	AMT.	SIZE	PRESS.	MATERIAL	DESCRIPTION	CAT. OR DWG. NO.	SERVICE	REMARKS	MATERIAL SPECS.	REQ.
	W-100	2	6"x6"x4"	—	STEEL	WELDING REDUCING TEE SCH.120 THICK	TUBE TURN, PT NO. 1222	MAIN FEED PUMPS DISCH.		A.S.T.M. A234 W.P.A.	3938
	W-101	4	6"	—	STEEL	90° WELD ELL, LONG RAD. SCH.120 THICK	1201	MAIN FEED PUMPS DISCH.		A.S.T.M. A234 W.P.A.	
	W-102	4	6"x4"	—	STEEL	CONCENTRIC WELDING REDUCER SCH.120 THICK	1290	MAIN FEED PUMPS DISCH.		A.S.T.M. A234 W.P.A.	
	W-103	6	4"	—	STEEL	WELDING TEE, SCH.120 THICK	1220	MAIN FEED PUMPS DISCH.		A.S.T.M. A234 W.P.A.	3938
	W-104	11	4"	—	STEEL	90° WELD ELL, LONG RAD. SCH.120 THICK	1201	MAIN FEED PUMPS DISCH.		A.S.T.M. A234 W.P.A.	
	W-105	4	6"	—	STEEL	WELDING TEE, SCH.120 THICK	1220	MAIN FEED PUMPS DISCH.		A.S.T.M. A234 W.P.A.	3938
	W-106	5	½"	3000#	FORGED STEEL	SCR'D. TEE	W.S. FIG. NO. 530				39-84
	W-107	1	4"x3"	—	STEEL	CONCENTRIC WELDING REDUCER, STD. THK.	TUBE TURN, PT. NO. 90			A.S.T.M. A234 W.P.A.	3938
	W-108	4	4"x3"	—	STEEL	CONCENTRIC WELDING REDUCER SCH.120 THICK	TUBE TURN, PT. NO. 1290			A.S.T.M. A234 W.P.A.	
	W-109	2	2"	—	FORGED STEEL	SOCKET WELDING BOSS - SCH.160 THICK	FIG.8 - EF - 358	MAIN FEED PUMPS DISCH.		A.S.T.M. A105 GRADE I	UA
	W-110	2	¾"	—	FORGED STEEL	SOCKET WELDING BOSS SCH.120 THICK	FIG.8 - EF - 358	RELIEF VAL. RECIRC LINE		A.S.T.M. A105 GRADE I	
	W-111	2	1¼"	—	FORGED STEEL	SOCKET WELDING BOSS SCH. 120 THICK	FIG.8 - EF - 358	EXT. DSPHTR. FOR EMERG. DSPHTD. STM 142		A.S.T.M. A105 GRADE I	
	W-112	2	½"	—	FORGED STEEL	SOCKET WELDING BOSS SCH. 120 THICK	FIG.8 - EF - 358	BOILER LAYUP		A.S.T.M. A105 GRADE I	
	W-113	1	10"	—	STEEL	90° WELD. ELL, LONG RAD. STD. THICK	TUBE TURN, PT. NO. 1	MAIN FEED PUMPS SUCTION		A.S.T.M. A234 W.P.A.	39-84-
	W-114	4	8"	—	STEEL	90° WELD. ELL, LONG RAD. STD. THICK	1	MAIN FEED PUMPS SUCTION			
	W-115	2	8"	—	STEEL	FLGD. PUMP INLET STRAINER ASSBLY., F.&D.		MAIN FEED PUMPS SUCTION	SUPPLIED BY DWG. PACIFIC PUMP INC. NO. TB-[illegible]	—	—
4	W-116	2	10"x8"	—	STEEL	CONCENTRIC WELDING REDUCER, STD. THICK	TUBE TURN, PT. NO. 90	MAIN FEED PUMPS SUCTION		A.S.T.M. A234 W.P.A.	3938
	W-117	1	6"x5"	—	STEEL	CONCENTRIC WELDING REDUCER, STD. THICK	90	CONDENSATE INLET 3RD. STAGE HEATER			
	W-118	17	6"	—	STEEL	90° WELD. ELL, LONG RAD. STD. THICK	1	2ND. STG. HTR. DEAERAT. DISCH. DIST. WAT. TK. SUCT.			39-84-
	W-119	9	5"	—	STEEL	90° WELD ELL, LONG RAD. STD. THICK	1	BY-PASS 1ST. STAGE FEED HEATER			
	W-120	4	6"x4"	—	STEEL	CONCENTRIC WELDING REDUCER STD. THICK	90	DISCH. FROM COND. PUMPS			3938
	W-121	1	6"	—	STEEL	45° WELD ELL, STD. THICK	5	2ND. STAGE FEED HEATER DISCH.			
	W-122	2	6"x5"	150#	CAST STEEL	FLANGED-CONCENTRIC REDUCER	GLOVER MACHINE WORKS CODE NO. 1513	MAIN COND. PUMPS DISCH.		A216 GR WCB	3938
	W-123	2	5"x4"	—	STEEL	90° REDUCING WELD. ELL, LONG RAD. STD. THICK	TUBE TURN PT NO. 1R	AUX. COND. PUMPS SUCT.		A.S.T.M. A234 W.P.A.	3938
	W-124	1	4"	—	RUBBER	FLGD. EXPANSION JOINT (8" F. TO F.)	MERCER STYLE 500	AUX CONDENSATE PUMP SUCTION	SEE GEN. NOTE NO. 11		3955
	W-125	5	2"	—	STEEL	90° WELD. ELL, LONG RAD. STD. THICK	TUBE TURN PT. NO 1	AUX. COND. PUMPS DISCH.	2ND. STG. FEED HTR. TO DRAIN REGUL. VAL.	ASTM-A-234 W.P.A.	39-84
	W-126	5	2½"x2"	—	STEEL	CONCENTRIC WELDING REDUCER STD. THICK	90	AUX. COND. PUMPS DISCH.	1ST. STG. FEED HTR. TO DRAIN REGUL. VAL.		3938
	W-127	14	4"	—	STEEL	90° WELD ELL, LONG RAD. STD. THICK	1	AUX. COND. PUMPS SUCT. & AUX. AIR EJECTOR			39-84
	W-128	1	3"	—	STEEL	90° WELD ELL, LONG RAD., STD. THICK.	1	MAIN FEED PUMPS. RE-CIRC. LINE TO DEAERAT.			
	W-129	4	3"	—	STEEL	90° WELD ELL, LONG RAD, STD. THICK	1	DIST. FEED HTRS. DRAIN DISCH. TO AUX. COND.	MAIN FEED PUMPS RELIEF VAL. DISCH.		
	W-130	2	2½"x2"	—	STEEL	CONCENTRIC WELDING REDUCER, EX. HVY. THK.	91	MAIN FEED PUMP RECIRC. LINE			39380
	W-131	2	2½"	—	STEEL	90° WELD ELL, LONG RAD., EX. HVY. THK.	2	MAIN FEED PUMP RECIRC. LINE			39-84-
	W-132	2	3"x2½"	—	STEEL	90° REDUCING WELD. ELL, LONG RAD. STD. THICK	1-R	1ST STG. FEED HTR. TO DRAIN REGUL. VAL.			3938
	W-133	6	2½"	—	STEEL	90° WELD ELL, LONG RAD. STD THICK	1	1ST. STG. FEED HTR. TO DRAIN REGUL. VAL.			39-84
	W-134	2	2"x1½"	—	STEEL	CONCENTRIC WELDING REDUCER STD. THICK	90	2ND. STG. FEED HTR TO DRAIN REGUL. VAL.			39380
	W-135	2	2"x1½"	—	STEEL	90° REDUCING WELD ELL, LONG RAD. STD. THICK	1-R	EMERG. FEED & TRANS. PUMP SUCTION	CONT. EVAPOR. SURFACE BLOW OVERBOARD		39380
	W-136	1	2½"x1½"	—	STEEL	90° REDUCING WELD ELL, LONG RAD. STD. THICK	1-R	CONT. EVAPOR. BOTTOM BLOW OVERBOARD			3938
	W-137	1	1½"x1½"x1¼"	—	STEEL	WELDING TEE STD. THICK	22	CONT. EVAPOR. SURFACE & BOTTOM BLOW OVERBD.			3938
	W-138	2	1½"x1½"x1¼"	3000#	FORGED STEEL	SOCKET WELDING REDUCING TEE	W-S FIG 580	BOILER BLOWS		A.S.T.M. A-105 GRADE II	3938
	W-139	2	1½"x1½"x¾"	3000#	FORGED STEEL	SOCKET WELDING REDUCING TEE	580	BOILER BLOWS			3938
	W-140	1	1½"	900#	STEEL	OVERBOARD DISCH. FITTING (PORT)	4639-372-2	BOILER BLOW PIPING		—	—
	W-141	1	1½"	900#	STEEL	OVERBOARD DISCH. FITTING (STB'D)	4639-372-2	BOILER BLOW PIPING		—	—
	W-142	1	2"	150#	STEEL	OVERB'D. DISCH. FITT. CONTAMINATED EVAPORATOR	4639-372-2	CONT. EVAPOR. BLOW PIPING OVERBOARD		—	—
	W-143	2	5"	—	STEEL	STD. FUNNEL	STD. EF-355 MK.24	DIST. WATER TK. OVERFLOW		—	UAO
	W-144	1	10"	—	STEEL	RESERVOIR		FABRICATED SEE DETAIL "A"			
	W-145	1	4"	150#	CAST CARB. STL. S.S. TRIM	FLG'D. STRAINER F.&D. "Y" TYPE	TATE, FIG 1-Y	DIST. FD. WAT. TKS. SPILL VALVE	STNS. STL. SCREENS W/ .057 PERF.	A.S.T.M. A216 47T-GR.WCB	3938
	W-146	1	4"	150#	CAST CARB. STL. S.S. TRIM	FLG'D. STRAINER F.&D. "Y" TYPE		MAIN COND. RECIRC. VALVE		A.S.T.M. A216 47T-GR.WCB	
	W-147	1	2"	150#	CAST CARB. STL. SS. TRIM	FLG'D. STRAINER F.&D. "Y" TYPE		AUX. COND. RECIRC. VALVE		A.S.T.M. A216 47T-GR.WCB	
	W-148	1	2"	150#	CAST CARB. STL. S.S. TRIM	FLG'D. STRAINER F.&D. "Y" TYPE		2ND. STAGE FD. HTR. CONTROL VALVE		A.S.T.M. A216 47T-GR.WCB	
	W-149	1	—	900#	STEEL	BOILER COMPOUND TANK	STD. EF-368 - FIG.1	BOILER CHEMICAL FEED	*		* UAO
	W-150	1	—	—	STEEL	FUNNEL FOR BOILER COMPOUND FILLING	STD. EF-368 - FIG.2	BOILER CHEMICAL FEED			
	W-151	6	1½"	3000#	FORGED STEEL	SOCKET-WELDING 90° ELBOW	W-S FIG. 480	MAIN FEED PUMP RECIRCULATING		ASTM A-105 GRADE II	39-84-
	W-152	2	1½"x1½"x½"	3000#	FORGED STEEL	SOCKET WELDING REDUCING TEE	W-S FIG 580	BOILER DRAIN		A.S.T.M. A-105 GRADE II	39381
	W-153	4	¾"	3000#	FORGED STEEL	90° ELBOW - SOCKET WELDING	480	SURFACE BLOWS OVERBOARD			39-84-
	W-153	4	¾"	3000#	FORGED STEEL	SOCKET WELDING - COUPLING	1180	SURFACE BLOWS OVERBOARD			
	W-154	12	1¼"	3000#	FORGED STEEL	90° ELBOW - SOCKET WELDING	480	EMERG. FEED & TRANS. PUMP DISCH.			
	W-155	6	1¼"	3000#	FORGED STEEL	SOCKET WELDING-TEE	580	EMERG. FEED & TRANS. PUMP DISCH.			39-84-
	W-156	15	1"	3000#	FORGED STEEL	90° ELBOW - SOCKET WELDING	480	EMERG. FEED & TRANS. PUMP DISCH.			
	W-157	6	1"	3000#	FORGED STEEL	SOCKET WELDING - TEE	580	EMERG. FEED & TRANS. PUMP DISCH			
	W-158	2	¾"	3000#	FORGED STEEL	90° ELBOW - SOCKET WELDING	W-S FIG. 480	RELIEF VALVE DISCH. MAIN FD. FROM BOILERS		A.S.T.M. A-105 GRADE II	
	W-159	3	4"		STEEL	WELDING SLEEVES	STD. EF-496-FIG#2			A-53 GRA ERW	UAO
	W-160	3	5"		STEEL	WELDING SLEEVES	STD. EF-496-FIG#2				
	W-161	6	1½"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1			A-53 OHFW	
	W-162	23	2"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1				
	W-163	22	2½"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1			AISI C-1015	
	W-164	18	3"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1			A-53 GRA ERW	
	W-165	43	4"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1			A-53 GRA ERW	
	W-166	14	5"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1			AISI C-1015	
	W-167	24	6"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1			AISI C-1015	
	W-168	9	8"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1				
	W-169	3	10"	—	STEEL	WELDING SLEEVES	STD. EF-496-FIG#1				

*NECESSARY STEEL FOR THESE ITEMS HAS BEEN ORDERED.

FOR CONT. SEE PANEL #7

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LIST OF FITTINGS - CONT.

ALT NO	FITTING NO	AMT	SIZE	PRESS	MATERIAL	DESCRIPTION	CAT. OR DWG. NO.	SERVICE	REMARKS	MATERIAL SPECS	REQ. NO.	REQ. NO.
△2	W-197	8	1¼"	3000#	STEEL	SCRD UNIONS STEEL TO STEEL SEATS	W-S, FIG.#9800	SEALING PIPE FOR TURBO GENERATORS EXHAUST VALVES		ASTM-A181 GR. II	39-84-1276	
	W-198	6	⅜"	3000#								
	W-199	22	½"	3000#								
△2	W-200	10	1¼"	3000#		SCRD. 90° ELBOWS	#430		Fittings also Reqd for L.O. Purifier Bowl Sealing.			
	W-201	30	½"	3000#								
	W-202	10	¼"	3000#								
	W-203	3	[illegible]	3000#		SCRD. REDUCING TEE	#530				39381-A	
	W-204	1	[illegible]	3000#								
	W-205	3	[illegible]	3000#								
△2	W-206	3	1½"	—		SCRD. HALF COUPLING	#1230				(2) 39381-A (1) 39381-D	
	W-207	2	½"	150#	BRONZE	SCR'D. STRAINER. MONEL SCREENS WITH 1/32 OPENINGS	MUELLER FIG. 351	CONDENSATE TO DISTILLER DESUPHTRS		B 61	393811-A	
	W-208	1	½"x½"x¾"	3000#	FORGED STEEL.	SCR'D. TEE.	W-S, FIG.# 530			ASTM-A181 GR. II	39381-A	
	W-209	6	½"	3000#	FORGED STEEL.	SCR'D. 90° ELBOW.	430				39-84-1276	
	W-210	4	½"x¾"	3000#	FORGED STEEL.	SCR'D. REDUCING COUPLING.	1130	LUB OIL PURIFIER BOWL SEALING			39381-A	
	W-211	1	½"	—	STEEL.	SCR'D. ORIFICE UNION WITH ⅛" ORIFICE	9840					
	W-212	5	¾"	3000#	STEEL	SCR'D. UNIONS. STEEL TO STEEL SEATS	9800				39-84-1276	
	W-213	4	¾"	3000#	STEEL	SCR'D. 90° ELBOWS.	430					
	W-214	1	¾"	3000#	STEEL	SCR'D. CROSS.	830				39381-A	
	W-215	2	¾" I.D.	—	—	GENERAL PURPOSE HOSE. 12" LONG WITH PLAIN AND ¾" I.P.S SWIVEL CONN ONE END.	END AND HOSE CLAMP				39710	
	W-216	1	-	—	—	FUNNEL. (MK #8 ON EF-355.)					UAO	
	W-217	2	10"	150#	RUBBER	FL'GD. EXPANSION JOINT (8" F.TO F.) F.&D.	MERCER STYLE 500	CONDENSATE SUCT.	SEE GEN. NOTE NO. 11		39554	
	W-218	4	1½x1½x1½	3000#	FORGED STEEL	SCR'D. TEE	W-S - FIG.# 530	EMERG. FEED TO EXTERNAL DESUPH'T'R		ASTM-A-105 GR. II	39-84-1276	
	W-219	2	1½x1"	6000#	CARBON STL.	HEX. HEAD SCR'D. BUSHING	W-S - FIG.#1430	EMERG. FEED TO EXTERNAL DESUPH'T'R				
	W-220	1	1½"x¾"	6000#	CARBON STL.	HEX. HEAD SCR'D. BUSHING	W-S - FIG.#1430	EMERG. FEED TO EXTERNAL DESUPH'T'R				
	W-221	3	1½x½	6000#	CARBON STL.	HEX. HEAD SCR'D. BUSHING	W-S - FIG.# 1430	EMERG. FEED TO EXTERNAL DESUPH'T'R.				
	W-222	3	1½"	3000#	FORGED STEEL	SCR'D. COUPLING	W-S - FIG.# 1030	EMERG. FEED TO EXTERNAL DESUPH'T'R.			39381-A	
	W-223	1	¾"	3000#	FORGED STEEL	SOCKET-WELDING UNION - STEEL TO STEEL SEATS	W-S FIG. 9820	EMERG. FEED & TRANS PUMP BY-PASS			39-84-1276	
	W-224	4	¾"	2000#	FORGED STEEL	SOCKET-WELDING 90° ELL	W-S - FIG.# 470	EMERG. FEED & TRANS PUMP BY-PASS				
	W-225	1	2"x½"	6000#	FORGED STEEL	HEX. HEAD SCR'D. BUSHING	W-S - FIG.#1430	EMERG. FEED & TRANS PUMP BY-PASS			39381-A	
	W-226	1	1¼"x¾"	6000#	FORGED STEEL	HEX. HEAD SCR'D. BUSHING	W-S - FIG.#1430	EMERG. FEED & TRANS PUMP BY-PASS			39-84-1276	
	W-227	2	½"x¼"	6000#	FORGED STEEL	HEX. HEAD SCRD. BUSHING	W-S-FIG.#1430	AUX. COND. PUMPS MECH. SEAL CONNS.		ASTM A105 GR. II		
	W-228	1	4"	150#	STEEL	1 3/32" DIA. ORIFICE PLATE - TYPE "A"	BETH. STD. BS-2-UF	MAIN COND. RECIRC. VALVE TO MAIN COND.	⅛" STEEL PLATE	A415-COMM'L GR.	UAO	
	W-229	12	1"	3000#	FORGED STEEL	SCRD. 90° ELBOW	W.S. FIG. NO. 430			ASTM-A-181 GR. II	39-84-1276	
	W-230	4	1"	3000#	FORGED STEEL	SCRD. TEE	W.S. FIG. NO. 530					
	W-231	4	1"	3000#	FORGED STEEL	SCRD. FEMALE UNION - STEEL TO STEEL SEATS	W.S. FIG. NO. 9800					
	W-232	1	2½"x1¼"	3000#	FORGED STEEL	LATROLET (SCRD) I.P.S. RUN & OUTLET 2½" RUN x 1¼" OUTLET	BONNEY FORGE			A-105 GR. 2	39382-A	
△2	W-233	2	2½x1½	3000#	FORGED STEEL	THREDOLET I.P.S. RUN & OUTLET	BONNEY FORGE			A-105 GR. 2	39382-C	
△4	W-234	2	2½x1½	—	FORGED STEEL	EX. HVY. SOCKOLET	BONNEY FORGE			A-105 GR. II	39382-E	
△4	W-235	1	3½x2½	—	STEEL	CONC. WELD. REDUCER - STD. THK.	TUBE TURN PT. NO. 90	RECIRC.		ASTM-A-234 W.P.A.	39380-B	
△5	W-236	4	3"	—	SEAM. STL.	90° WELD. ELL, LONG RAD., SCH. 160 THICK	TUBE TURN PT. NO. 1201	MAIN FEED PUMP DISCH.		ASTM-A-234 W.P.A.	22-39551-A	
△6	W-237	4	1"	—	FORGED STEEL	SCREWED BOSS - SCH. 120	FIG. 9 - EF-358			ASTM A105 GR I	UAO	
△6	W-238	4	1"		FORGED STEEL	SQ. HD. PIPE PLUG (FOR ITEM W-237) SCRD.	WATSON-STILLMAN				39-84-1276	

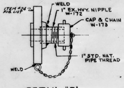
LIST OF VALVES - CONT.

ALT. NO.	VALVE NO.	AMT.	SIZE	PRESS	MATERIAL	DESCRIPTION	CAT. OR DWG. NO.	SERVICE	REMARKS	MATERIAL SPECS.	REQ. NO.	REQ. NO.
	W-60	1	2"	150#	CAST CARB. STL. STAIN. STL. TRIM	FLG'D. END DIAPHRAGM CONTROL VALVE	LESLIE CO. CLASS-DOS-X	1ST. STG. FEED WAT. HTR. DRAIN REGUL. VAL.			—	—
	W-61	1	1¼"	150#	CAST CARB. STL. STAIN. STL. TRIM	FLG'D. END DIAPHRAGM CONTROL VALVE	LESLIE CO. CLASS-DOS-X	2ND. STG. FEED WAT. HTR. DRAIN REGUL. VAL.			—	—
	W-62	1	3"	150#		FLG'D. END DIAPH. CONTROL - SPILL VALVE	VALTEK	DEAER. SPILL VALVE TO DIST. FD. WAT. TKS.	FURN. WITH DEAER		—	—
△3	W-63	1	2"		CAST STEEL S.S. TRIM	2-WAY SOLENOID OPERATED VALVE, S.W. ENDS	WORCESTER VALVE CO. FIG. 446-T-150	MAIN COND. RECIRC. VAL. TO MAIN COND.	WITH MODEL NO. 34 ACTUATOR		39550-D	—
	W-64	1	1"	150#		FLG'D. END DIAPHRAGM CONTROL VALVE	LESLIE CO.	AUX. COND. RECIRC. VALVE			—	—
	W-65	1	1"	600#	CAST STEEL	FLG'D. END DIAPHRAGM CONTROL VALVE	LESLIE CO. CLASS DDOS	EXT. DSPHTR. FOR EMERG. STM. TO L.P. TURBINE			—	—
	W-66	2	3"	900#		FLG'D. END DIAPHRAGM CONTROL VALVE	FISHER GOVERNOR CO.	BOILER FEED CONTROL SYSTEM			—	—
	W-200	2	1½"	900#	FORG. CHR-M.S. STAIN. STL. TRIM	FLG'D. GLOBE STOP-CHECK VALVE F.&D.	EDWARDS FIG. 941 MOD.	BOILER BLOW	STRAIGHT WAY TYPE BOLTED BONNET	A.S.T.M. A-105 Grade II	39550	
	W-201	2	¾"	1500#	FORG. CHR-M.S. STAIN. STL. TRIM	FLG'D. GLOBE STOP-CHECK VALVE F.&D. B.B.	EDWARDS FIG. 1046	BOILER SURFACE BLOW				
	W-202	2	¾"	1500#	FORG. CHR-M.S. STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D., B.B.	EDWARDS FIG. 1028	BOILER SURFACE BLOW				
	W-203	2	½"	1500#	FORG. CHR-M.S. STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D. B.B.	EDWARDS FIG. 1028	BOILER DRAIN				
	W-212	2	1½"	900#	FORG. CHR-M.S. STAIN. STL. TRIM	FLG'D. GLOBE VALVE F.&D.	EDWARDS FIG. 941	BOILER BLOW	STRAIGHT WAY TYPE BOLTED BONNET			
	W-208	1	2"	150#	FORG. STL. S.S. TRIM	FLG'D. GLOBE STOP-CHECK VALVE F.&D.	POWELL, FIG 1535	CONTAM. EVAPOR. OVERBOARD DISCH.	BOLTED BONNET	A.S.T.M. A-105 GRADE II	39550	
	W-211	2	1½"	150#	FORG. STL. S.S. TRIM	FLG'D. GLOBE VALVE, F.&D.	1531 F.E.	CONTAM. EVAPOR. SURFACE & BOTTOM BLOW	BOLTED BONNET			
	W-74	2	½"	200#	BRONZE BRZ. MTD.	SCR'D SWING CHECK VALVE, SCRD CAP	POWELL, FIG. 560-Y			B-61		
	W-56	2	1"	1500#	FORGED STEEL STAIN. STL. MTD	FLG'D. GLOBE VALVE F.&D. B.B.	EDWARDS FIG. 1028	EXT. DSPHTR FOR EMERG. DSPHTR STM.		A.S.T.M. A-105 Grade II		
△2	W-70	2	1½"	200#	BRONZE	SCR. GLOBE VALVE - UNION BONNET	POWELL CO. FIG. 110	SEALING PIPE FOR T.G EXHAUST VALVES		B-61	39-84-1276	
	W-71	4	¼"	200#						B-61		
	W-72	4	½"	300#		SOLENOID VALVE - SCRD. - TWO WAY	ASCO. FIG. 8210B94				39550-A	
	W-73	4	¾"	200#	BRONZE.	SCR'D GLOBE VALVE. - UNION BONNET	POWELL CO. FIG. 110	LUB OIL PURIFIER BOWL SEALING.		B-61	39-84-1276	
	W-75	1	¾"	600#	FORGED STEEL STAIN. STL. MTD	SOCKET-WELDING GLOBE VALVE - B.B.	EDWARDS FIG. 848-Y	BY-PASS EMERG. FEED & TRANS. PUMP	BOLTED BONNET	ASTM-A-105 GR. II	39550	
	W-76	1	6"	150#	CAST STEEL S.S. TRIM	FLG. HORZIONAL SWING CHECK VALVE, F.&D.	POWELL FIG. 1561-A			A216 GR. WCB	39550-B	
	W-77	1	2½	150#	CAST STEEL S.S. TRIM	FLG. HORZIONAL SWING CHECK VALVE	POWELL FIG. 1561-A			A216 GR. WCB		
△8	W-78	2	1"		BRONZE BRONZE MTD.	SCRD. BALL VALVES	WORCESTER TYPE 411-T-SE		SEE GEN. NOTE NO. 12		39590-N	

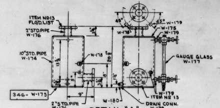
LIST OF FITTINGS - CONT.

ALT. NO.	FITTING NO.	AMT.	SIZE	PRESS	MATERIAL	DESCRIPTION	CAT. OR DWG. NO.	SERVICE	REMARKS	MATERIAL SPECS.	REQ. NO.	REQ. NO.
△2	W-170	1	4"	—	STEEL	I.P.S. PIPE RESERVOIR - 18" LG. WITH ⅜" PLT. WELDED IN ONE END	SEE PANEL 12 ON M-4639-372-11-1	SEALING WATER TO TURBO-GENS. EXH. VALVES			UAO	
	W-171	2	1"	600#	FORGED STL.	FLANGED HOSE ADAPTER		BOILERS WASHDOWN CONN.	FABRICATED SEE DETAIL "B"		UAO	
	W-172	2	1"	—	SEAMLESS STEEL	1"-EX. HVY. NIPPLE - 2" LONG - THR'D. ONE END		BOILERS WASHDOWN CONN.		A-53 GR. B		
	W-173	2	1"	—	BRONZE	1" HOSE CAP & CHAIN	ELKHART BRASS MFG CO CAT J-R40 CAT NO 310	BOILERS WASHDOWN CONN.	1" STD. NAT. PIPE THRD.	A.S.T.M. B-61		
	W-174	16⅝"	10"	—	STEEL	10" STD. PIPE		RESERVOIR FOR CONTROL VALVE	SEE DETAIL "A"	A-53 GR.A ERW.		
	W-175	2	5/16" R.	—	STEEL	10" DIA. END PLATE - 5/16" THICK		"	"	A-36	*	
	W-176	8"	2"	—	STEEL	2" STD. PIPE		"	"	A-53 CHFW		
	W-177	1	—	—	BRONZE	½" SCR'D LIQUID LEVEL WATER GAUGE C TO C 13⅜" NON-AUTO. TYPE	ERNST CAT. 2160-A FIG. L-150-E	"	"	A.S.T.M. B-61		
△4	W-178	10	¾"	—	STEEL	¾" SCREWED HALF COUPLING	W-S FIG. 1230	"	"	A181 GR I		(2) 39381-A (8) 39381-F
△4	W-179	8	½"	—	STEEL	½" SCREWED HALF COUPLING		"	"			(10) 39381-F (6) 39381-A
	W-180	1	½"	125#	BRASS	½" STL. PIPE PLUG - SQ. HEAD	FLAGG 4173	"	"	B-62		
	W-181	2	4"x3"	—	STEEL	CONCENTRIC WELDING REDUCER STD. THICK	TUBE TURN PT NO 90	DEAER. SPILL VALVE TO DIST. FD. WAT. TKS.		A.S.T.M. A-234 W.P.A	39380-B	
	W-182	2	4"x2"	—	STEEL	CONCENTRIC WELDING REDUCER STD. THICK		MAIN COND. RECIRC. VAL. TO MAIN COND.				
	W-183	2	2"x1"	—	STEEL	CONCENTRIC WELDING REDUCER STD. THICK		AUX. COND. RECIRC. REGUL. VALVE.				
	W-184	1	1¼"	—	FORGED STEEL	THREADED LATROLET I.P.S. RUN & OUTLET 6" RUN x 1¼" OUTLET	BONNEY FORGE	SALINITY CELL MAIN & AUX. COND. PUMPS		ASTM A-105 GRADE II	39382-A	
	W-185	2	1"x1"x1¼"	3000#	FORGED STEEL	SOCKET WELDING REDUCING TEE	W-S FIG. 580	EMERG. FEED TO EXT. DESUPH'TR. STEAM		A.S.T.M. A-105 GRADE II	39381-A	
	W-186	1	1"	600#	CAST STEEL	SOCKET WELDING STRAINER	YARWAY FIG #921SW	FEED WATER TO EXT. DESUPH'T'R.	.033" PERF. STAINLESS STEEL	A.S.T.M. A216 WCB.	393811-A	
	W-187	1	1"	600#	FORGED STEEL	NINE (9) PLATE MULTIPLE 3/32" SHARP EDGE ORIFICES - EXCEPT F. TO F. 5 15/16" LONG.	STD. EE-429-A MOD.	FEED WATER TO EXT. DESUPH'T'R.	ITEM NO 3 TO BE 5" LONG ITEM NO 5 & 6-9 REQ'D.		UAO	
	W-188	1	1½"x1½"x½"	3000#	FORGED STEEL	SOCKET WELDING REDUCING TEE	W-S 580	EMERG. FEED & TRANS PUMP TO BOILER COMP. TANK		A.S.T.M. A-105 GRADE II	39381-A	
	W-189	1	1¼"	3000#	FORGED STEEL	SOCKET WELDING CAP	W-S 1380	EMERG. FEED & TRANS PUMP PRESS. GAUGE	DRILL & TAP ¼" I.P.S. THRD. PRESS. GAUGE IN TOP	A.S.T.M. A-105 GRADE II		
	W-190	1	1½"x1½"x1"	3000#	FORGED STEEL	SOCKET WELDING REDUCING TEE	W-S 580	EMERG. FEED & TRANS PUMP TO BOILER WASHDOWN		A.S.T.M. A-105 GRADE II		
	W-191	2	1"x¼"	2000#	FORGED STEEL	HEX. HEAD SCRD. BUSHING	W-S FIG. #1430	AUX AIR EJECTOR LOOP-SEAL TO AUX COND			39-84-1276	
	W-192	1	¾"x¾"x½"	3000#	FORGED STEEL	SOCKET WELDING REDUCING TEE	W-S 580	BOILER LAY-UP		A.S.T.M. A-105 GRADE II	39381-A	
	W-193	8	1"	3000#	FORGED STEEL	SOCKET WELDING COUPLING	W-S 1080	EXT. DSPHTR & BOILER WASHDOWN			39-84-1276	
	W-194	1	1"x⅜"	3000#	FORGED STEEL	SOCKET-WELDING REDUCER INSERTS	W-S - TYPE 2	BOILER WASH DOWN	FOR SCH. 80 PIPE	ASTM. A-105 GRADE II	39-84-1276	
	W-195	4	¾"	—	FORGED STEEL	SCREWED BOSS SCH. 120 THICK	FIG. 9-EF-358	TEMP. SENSORS ELIMENT	SIM. TO EF-358 EXCEPT LEN. "E" TO BE 2¼" & "F" DIM. 13/16".	ASTM A-105 GRADE I	UAO	
	W-196	4	½"	3000#	FORGED STEEL	90° ELLS - SOCKET WELDING	W-S FIG. 480			ASTM. A-105 GR. II	39-84-1276	

CONT. ZONE 9



DETAIL "B"
FLANGED HOSE ADAPTER
FITTING NO. W-171
SCALE: HALF SIZE
2-REQ'D.

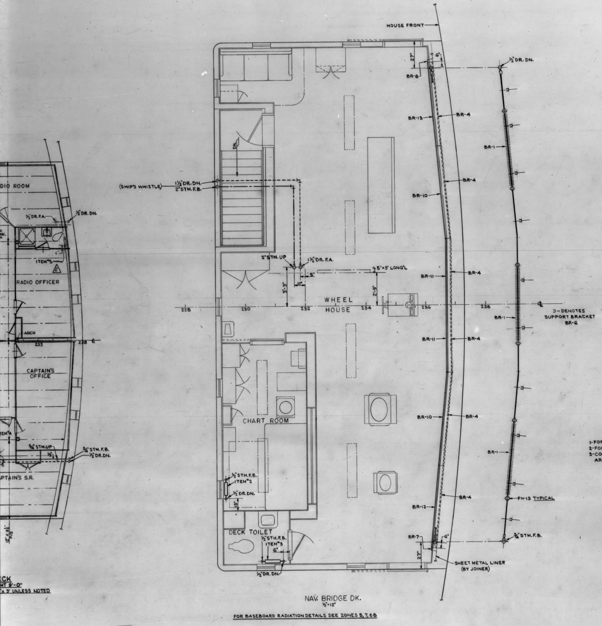


DETAIL "A"
RESERVOIR
FITTING NO. W-144
SCALE ÷ 1½" = 1'-0"

9 8 7

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

M-4639-372-11-3 SYS. 32 ALT. 8
M-449
F 3



FOR BASEBOARD RADIATION DETAILS SEE ZONES 5, 7, & 8

NOTES
1- FOR GENERAL NOTES, LEGEND, & TYPICAL DETAILS, SEE REF. #2
2- FOR BILL OF MATERIAL SEE REF. #2
3- CONVECTORS, AND BASEBOARD RADIATION COMPONENTS ARE LISTED ON REF. #1

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D
1	1/27/72	4-C 5-A	1. "B" DECK REVISED RADIO ROOM ENTR. & SERVICE CORE TRUNK. PER OWNERS REQUEST. 2. PLAN A DECK (S) ADDED ICE CUBE MAKER IN OIL SKIN LKR. - PLAN DEVELOPMENT.	R.H.H.	
2	2/1/72	6-C 5-C 4-C	1. FCSLE. DK. FR. 238 (P) RELOCATED HTR. ITEM #13 FROM RELIEF OFF. S.R. TO 3RD MATE S.R. 2. "A" DECK FR. 237 (P) REVISED PIPE SUPPLY & DRAIN LINES FOR RELOCATED HTR. ITEM #5 3. B DECK FR. 237 (P) RELOCATED HTR. ITEM #5 IN RADIO OPER. S.R. TO FWD. BHD. ABOVE CHANGES MADE TO COMPLY WITH G.G.S. CO. LTR. JAN. 10 1972 (3512/148-10)	R.H.H.	
3	3/30/72	6-C	1. REARRANGED 3RD MATE T.&S. TO COMPLY WITH (HOPEMAN SK. #520 & LTR. OF MAR. 15, 1972.)	R.H.H.	
4	5-16-72	6 6	"FOCSLE DK. - PORT" 3RD MATE T&S REVISED TO AGREE WITH HOPEMAN SK. #520 "3RD. MATE T&S" CONVECTOR ITEM #13 RELOCATED FROM FWD. BHD. TO AFT BHD., TO COMPLY WITH P.F.E. LETTER C7-51649-11,12,59, DATED 17 APRIL 72	P.G.	
5	2-9-73	4	CONVECTOR IN BATTERY LKR. RELOCATED (PER SCN #182)	G.McG.	

REFERENCE PLANS

NO.	PLAN NO.	TITLE
4	-5	STM. HEATING SYS. AFT - 2ND DK. & BEL. & L/M
3	-4	STM. HEATING SYS. AFT - UPPER DK. & ABV.
2	-3	STM. HEATING SYS. FWD. - UPPER DK. & BEL. & L/M
1	M-4639-376-05-1	CONVECTOR LIST

HULL	DESIGN	CHARGE
H-4640		
H-4639	CONTAINER SHIP	10-4639

JOB NO. 374 376

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ½" = 12" DATE 12-8-71
DRAWN P.G. APPROVED
TRACED APPROVED
CHECKED G. McG. APPROVED WBW

PLAN NO. M-4639-376-05-2 ALT. NO. 5

STM. HEATING SYS. - FWD. QTRS.
FOC'SLE DK. & ABV.
& WHISTLE PIPING

APPROVAL LETTERS

HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-10-72				
A.B.S.	X				
U.S.C.G.	3-22-72				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

4639-40; 4639-40; 4639-40 REPL.; 4639-40 REPL.; 4639-40 REPL.; 4639-40 REPL.; 4639-40 REPL.

		DATE OF ISSUE						
	ALTERATION	0	0	2	2	3	4	5
	ENGINEERING DISTRIBUTION	12-10-71	1-19-72	2-2-72	2-21-72	4-4-72	5-18-72	2-13-73
MAIL	OWNERS	5		2		2	2	
	AMERICAN BUREAU							
	LLOYD'S R.S.							
	U.S.M.A.							
	U.S. NAVY							
	U.S.C.G.	3			3			
	JOINER CONT'R.							
INSPECTION	OWNER'S INSP.		1	1		1	1	1
	AM. BU. INSP.							
	LLOYD'S INSP.							
	U.S.M.A. INSP.		1	1		1	1	1
	U.S. NAVY INSP.							
	U.S.C.G. INSP.							
OFFICE	HULL DRAFT. - 21	1	1	1		1	1	1
	MACH. DRAFT. - 22	1	1	1		1	1	1
	ELEC. DRAFT. - 23	1	1	1		1	1	1
	OUTFIT. DRAFT. - 25							
	ESTIMATING							
	BARRETS - SHIP SUPT.	1						
MISC.	PRODUCTION (SCD)							
	ORDER DEPT.							
	JOINER CONT. YARD							
	NELSON - PLANNING	2						
	TOTAL ENG'R. DIST.	19	5	7	3	7	7	5
	YARD DISTRIBUTION	1-24-72	2-3-72	4-4-72	5-22-72	2-24-73		
YARD	PLAN'G	1	1	1	1	1		
	A. J. DALBY	3	3	3	3	3		
	PIECE RATE - 11	1	1	1	1	1		
	TEST DEPARTMENT							
	STEEL PLANNING							
STRUCTURAL	GROUND ASSEMBLY	4	4	4	4	4		
	35 DEPT.	2	2	2	2	2		
	NO. WAY							
	NO. WAY							
	NO. WAY							
	NO. WAY							
	STRUCT. SUPER.	2	2	2	2	2		
	OPTICAL DETAIL - 45	2	2	2	2	2		
	WET DOCK							
MACH'Y & OUTFIT.	PIPE SHOP - 52	4	4	4	4	4		
	OUTFIT. #1 PIER							
	PIPE DRAFT. - 52	2	2	2	2	2		
	BOILER SHOP - 58							
	OUTSIDE MACH. - 60	2	2	2	1	1		
	Q - MAT'L	2	2	2	1	1		
	ELECTRIC SHOP - 70							
	SHEET MET. SHOP - 74	3	3	3	2	2		
	COPPER SHOP - 51							
	PAINT SHOP - 75	1	1	1	1	1		
OTHER	WELDING	1	1	1	1	1		
	MOLD LOFT - 41	1	1	1	1	1		
	BRACKET SHOP							
	ORDER DEPT.	1	1	1	1	1		
	TOTAL YARD DIST.	31	31	31	29	29		

4639-40 ALT. 4
4639-40 - ALT. 5

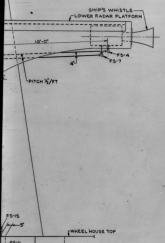
M-460 20 SQ. FT.

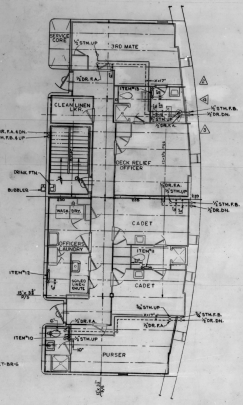
3 2 1

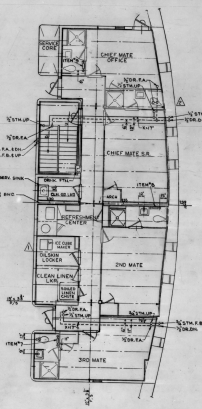
F
1
M-4639-376-05-2 ALT. 5
M-460

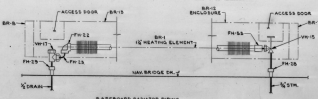
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

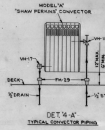
F 2
111-4641
111-4641-052
ALT. 2
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

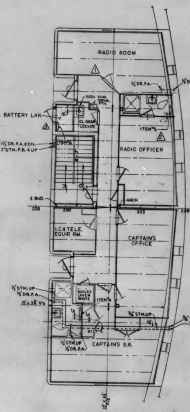


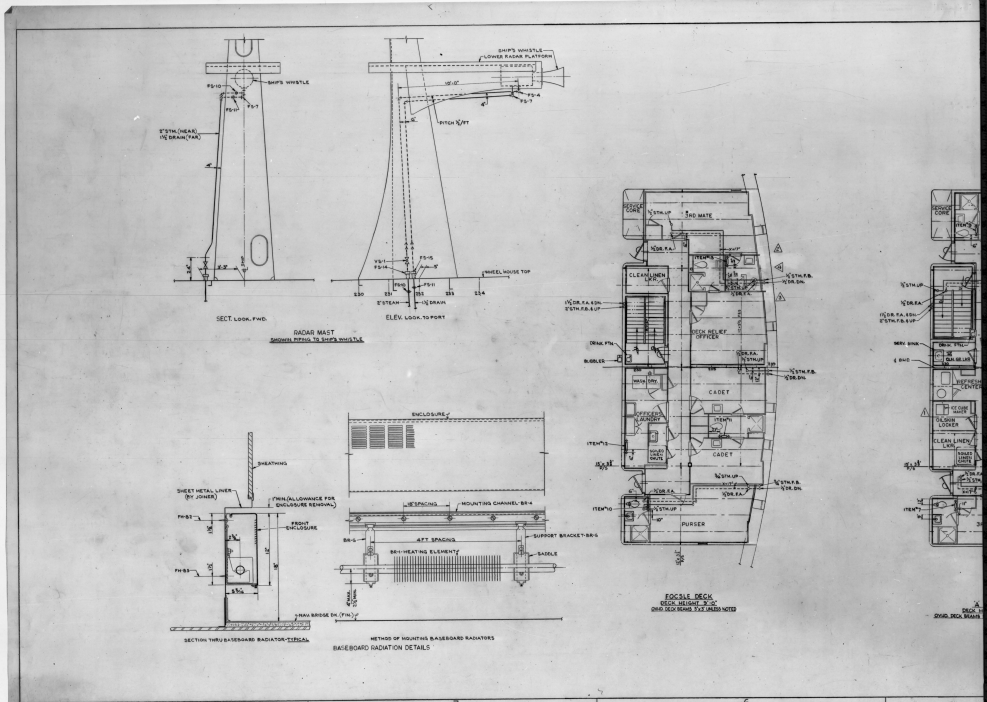












F 3

M-4639-376-05-2
ALT. 5

M-460

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

BILL OF MATERIAL FOR ONE HULL

QUAN.	SIZE	MATERIAL	DESCRIPTION	MFR. OR REF. DWG.	REMARKS	A.S.T.M. OR A.S.A. NO	REQ. NO.
6'	2½"	STL.	PIPE-STD.WT.-BLACK			A-53, OHFW	39-376-053-728
102'	2"						
112'	1½"						
35'	1¼"						
10'	1"						
114'	¾"		-EX.HVY.-				
760'	½"						
12'	⅜"						
1	1½"	STL.	RELIEF VALVE-FLGD.	ORDERED ON RELIEF VALVE SCHEDULE SET AT 40#			—
1	1"	—	TEMPERATURE REGULATOR		ORDERED BY SPEC.		—
1	½"	STL.	PRESSURE REDUCING VALVE				—
1	2"	F. STL.	GLOBE VALVE-S.W.-600#	ROCKWELL FIG.#B4BY		A105-GR.2	39470
2	1½"						(1)39470 (1)39470-1X
1	1¼"						22-39470-A
3	1"			ROCKWELL FIG.#269BY	STNL.ST'L.TRIM		22-39470
4	¾"						22-39470
6	½"						(4)22-39470 (2)39470-1X
1	⅜"						22-39470-A
5	¼"						22-39470
2	¾"	F. STL.	CHECK VALVE-HORIZ.-S.W.	ROCKWELL FIG.#2G72Y			(1)22-39470 (1)22-39470-A
4	½"						22-39470
1	⅛"	BRASS	PET COCK	CRANE-FIG.#702		B-62	
1	¾"		RADIATOR VALVE-ANGLE	-FIG.#4271			22-39470-A
13	½"			-			22-39470
14	½"	BRASS	RADIATOR TRAP-ANGLE	SARCO-SG5			22-393812-C
1	½"		-STRAIGHTWAY	-			
1	½"	CRES	IMPULSE TRAP	-TD-50		A276-TX304	22-393812-C
1	½"	SEMI STL.	INV. BUCKET TRAP WITH AIR VENT	-B12-X 125		A126-CL.B	
1	1"			-B32 125			
2	¾"		FLOAT TRAP WITH AIR VENT	-FT-75			
1	—	—	PRESSURE GAGE		ORDERED ON LIST OF GAGES	—	—
1	1½"	F. STL.	STRAINER-S.W.	ROCKWELL FIG.#23BY		A105-GR2	22-393811-G
2	1"						
3	¾"						
2	½"						
2	2"	F STL.	UNION-S.W.	W/S PART#9820	STL TO STL. SEATS	A181-GR.2	39-84-1485
3	1½"		-				
6	1"		-				
10	¾"		-				
46	½"		-				
2	⅜"		-				
6	1¼"		-SCRD.	W/S PART#9800			
1	2½"	F. STL.	90°ELBOW-S.W.	W/S PART#4 0			22-39381-J
8	2"						39-84-1485
10	1½"						
5	1¼"						
6	1"						
12	¾"						
120	½"						
1	1¼"×½"		90°ELBOW-SCRD.	W/S PART#430			22-39381-J
1	½"		- - STREET	W/S PART#730			
1	1½"×1¼"	F. STL.	90°ELBOW-S.W.	W/S PART#4 0			22-39381-J
2	2"	STL.	STUFFING BOX-FOR I.P.S.	ANVIL-TYPE 250	POLYACRYLIC GASKETS-COMPOUND #9170 IN THE COMPRESSION NUTS.	A-120	22-393810-E
2	1½"					A512	
1	1"					A512	
8	¾"					A512	
44	½"					A512	
1	1¼"×1"×1"	F. STL.	TEE-S.W.	W/S PART#5 0		A181-GR2	
1	2"×¾"×2"	F. STL.	TEE-S.W.	W/S PART#5 0		A181-GR2	22-39381-J
1	2"×¾"×1½"						
1	1½"×¾"×1½"						
1	1¼"×¾"×1¼"						
1	1¼"×1"×1¼"						
1	1"×1"×½"						
1	1"×1"×¾"						
1	1"×¾"×½"						
4	¾"×½"×¾"						
7	¾"×¾"×½"						
20	½"						39-84-1485
2	¾"						
1	1¼"						
1	½"	F. STL.	TEE-SCRD.	W/S PART#530			
2	⅜"						
1	1"×2"RUN	F. STL.	SOCKOLET-SCH.#80	BONNEY FORGE	I.P.S. RUN & OUTLET	A105-GR2	22-39382-F
2	¾"×2"RUN						
4	½"×2"RUN						
2	⅜"×2"RUN		THREDOLET-SCH.#80				
1	¼"×2"RUN						
1	½"	F STL.	COUPLING-SCRD.	W/S PART#1130		A181-GR.2	39-84-1485
1	1¼"×¾"	F. STL.	REDUCING COUPLING-SCRD.	W/S PART#1130		A181-GR2	22-39381-J
1	1¼"×1"		-				
1	½"×⅜"		-				
1	2"×1"		-S.W.	W/S PART#1170			22-39381-J
1	1½"×1"		-				
1	1¼"×½"		-				
1	¾"×½"		-				
20	½"	F STL.	COUPLING-S.W.	W/S PART#1070			39-84-1485
5	¾"						
6	1½"						
1	1½"×1"		REDUCING INSERT	W/S			39-84-1485
1	1¼"	F. STL.	CAP-SCRD.	W/S PART#1330			22-39381-J
1	1"						
1	¾"						
1	½"		PLUG-SCRD. HEX. HD.	W/S PART#1630			22-39381-J
1	3"×2"		BUSHING-SCRD.	W/S PART#1430			
1	2½"	F. STL.	FLANGE-150#-S.W.	TUBE TURN PART#150	BORE SCH.40	A181-GR.1	22-39383-P
9	2"						[illegible] 22-39383-P
1	1½"×6"O.D.		-RED.	150-MOD.			22-39383-P
2	½"				BORE EX.HVY.		
1	1½"		-300#-S.W.	PART#151	SCH.40		22-39383-B

3

BILL OF MATERIAL FOR ONE HULL

ITEM NO.	QUAN.	SIZE	MATERIAL	DESCRIPTION	MFR. OR REF. DWG.	REMARKS	A.S.T.M. OR A.S.A. NO.	REQ. NO.
FH-76	5 DOZ.	FOR #10 SCREW	STL.	SCREW ANCHOR-4WING-LONG	ACKERMAN JOHNSON			
FH-77	5DOZ.	#10-24N.C.		SCREWS-RD.HD.-2"LONG				
FH-78	1	2½"	ASBESTOS	GASKET-RING TYPE-150# ⅛"THK	J.M.#60		COMM'L.	39-84-1485
FH-79	6	2"		-				
FH-80	2	½"		-				
FH-81	1	1½"		- -300#				22-39385-G
FH-82	3DOZ.	#6 SHEET METAL	STL.	SCREWS-RD.HD.-¾"LONG				
FH-83	1DOZ.			-FLAT HD.-1"LONG				
FH-84								
FH-85								
FH-86								
FH-87								
FH-88								
FH-89								
WHISTLE PIPING-JOB No.374								
PS-1	172'	2"	STL.	PIPE-EX.HVY.-BLACK			A-53, OHFW	39-376-053-728
PS-2	184'	1½"						
PS-3	3IN.	1¼"						
PS-4	8'	½"						
VS-1	2	2"	F. STL.	GLOBE VALVE-S.W.	ROCKWELL FIG.#B4BY		A105-GR.2	22-39470-A
VS-2	2	1½"						22-39470
VS-3	2	½"			ROCKWELL FIG.#269BY			22-39470
VS-4	1	1½"		STOP-CHECK VALVE-S.W.	ROCKWELL FIG.#B6BY			22-39470-A
VS-5	1	½"						22-39470
VS-6								
VS-7	1	½"	CRES	IMPULSE TRAP	SARCO TYPE-TD-50		A276-TY.304	22-393812-C
VS-8	1	¼"	F. STL.	GLOBE VALVE-S.W.	ROCKWELL FIG.#269BY		A105-GR2	22-39470
VS-9	1	1½"	SEMI STL.	FLOAT TRAP (WITH AIR VENT)	SARCO TYPE-FTN 0-150		A126-CL.B	22-393812-C
FS-1	1	1½"	F. STL.	STRAINER-S.W.	ROCKWELL FIG.#23BY		A105-GR.2	22-393811-G
FS-2	1	½"						
FS-3								
FS-4	14	2"	F STL.	90°ELBOW-S.W.-SCH.#80	W/S PART#470		A181-GR.2	39-84-1485
FS-5	16	1½"						
FS-6	4	½"						
FS-7	1	1½"×1¼"		RED.				22-39381-J
FS-8	1	1½"		45°ELBOW-S.W.-SCH.#80	W/S PART#670			39-84-1485
FS-9								
FS-10	6	2"	F. STL.	UNION-S.W.	W/S PART#9820	ST'L. TO ST'L. SEATS		39-84-1485
FS-11	9	1½"						
FS-12	2	½"						
FS-13								
FS-14	7	2"	F. STL.	STUFFING BOX-FOR I.P.S.	ANVIL-TYPE 250	POLYACRYLIC GASKETS-COMPOUND #9170 IN THE COMPR'N. NUTS.	A120	22-393810-E
FS-15	7	1½"						
FS-16	8	2"	F. STL.	COUPLING-S.W.-SCH.#80	W/S PART#1070		A181-GR.2	39-84-1485
FS-17	9	1½"						
FS-18	1	2"×½"×2"	F. STL.	TEE-S.W.-SCH.#80	W/S PART#570			22-39381-J
FS-19	2	1½"						39-84-1485
FS-20	1	½"						
FS-21	1	½"	F. STL.	CAP-SCRD.	W/S PART#1330			22-39381-J
FS-22	1	½"×2"RUN		SOCKOLET-SCH.#80	BONNEY FORGE		A105-GR.2	22-39382-F
FS-23	1	2"		FLANGE-S.W. 150# F.F.&D.	TUBE TURN PART#150	BORE SCH. 40	A181-GR.1	22-39383-P
FS-24	1	1½"×6"O.D.		-RED. F.F.&D.	150-MOD.			
FS-25	2	2"	ASBESTOS	GASKET-RING TYPE-150# ⅛"THK	J.M.#60		COMM'L.	39-84-1485

GENERAL NOTES

1- ALL STEAM SHALL BE DISTRIBUTED AT 35 PSIG
2- BENDS SHALL BE USED IN LIEU OF ELBOWS WHERE PRACTICABLE-THE RADIUS OF THE BEND TO THE ℄ OF THE PIPE SHALL BE FIVE TIMES THE NOMINAL SIZE OF THE PIPE
3- ALL PIPING SUBJECT TO MECHANICAL INJURY SHALL BE ADEQUATELY PROTECTED
4- ALL VALVE HANDWHEELS SHALL BE ACCESSIBLE, OR EXTENSION STEMS SHALL BE PROVIDED WHERE NECESSARY
5- PENETRATIONS THRU NON-TIGHT BULKHEADS, TRANSVERSES, AND LONGITUDINALS ARE TO ALLOW FOR FULL THICKNESS OF INSULATION, UNLESS OTHERWISE NOTED
6- FOR PENETRATIONS THRU W.T. BULKHEADS & W.T. DECKS, STUFFING BOXES SHALL BE USED
7- PIPES TO BE INSULATED IN ACCORD WITH INSULATION SCHEDULE
8- PIPE HANGERS SHALL BE INSTALLED SO AS NOT TO RESTRICT THE MOVEMENT OF THE PIPE DUE TO EXPANSION
9- PROVISION FOR EXPANSION IN STEAM LINES SHALL BE MADE BY MEANS OF OFFSETS OR "U" BENDS
10- ALL PIPING IN LOCATIONS SUBJECT TO FREEZING SHALL BE INSTALLED SO THAT PIPING MAY BE THOROUGHLY DRAINED
11- PIPING FOR STEAM HEATING SYS. WILL BE DETAILED UNDER SYS. #44
12- WHISTLE PIPING WILL BE DETAILED UNDER SYS. #27
13- STEAM TO SHIP'S WHISTLE SHALL BE DISTRIBUTED AT 142 PSIG
14- CONVECTORS ARE LISTED ON REF. #1
15- VENTILATION HEATERS ARE LISTED ON REF. #2

LEGEND

- ———— INTERMITTENT STEAM
- —·—·— CONSTANT STEAM
- - - - - DRAIN
- STM.- STEAM
- DR.- DRAIN
- F. A.- FROM ABOVE
- F. B.- FROM BELOW
- DN.- DOWN

2

PIPE SHT. 39-376-05-3-728
SUPPLY SHT. 39-84-1485

NO.	PLAN NO.	TITLE
9		
8		
7	H-4639-129-02-5	UPPER DK. PLATING FWD.-FR. 220-272
6	-191-22	VENT. & A/C ARRGMT.-FWD. FAN RM.-UPPER DK.
5	-376-05-5	-AFT QTRS.-2ND DK. & BEL. & L/M
4	-376-05-4	-AFT QTRS.-UPPER DK. & ABV.
3	-376-05-2	STM. HEAT. SYS.-FWD. QTRS.-FOCSLE DK. & ABV.
2	-191-2	VENTILATION-A/C FAN & COIL LIST
1	M-4639-376-05-1	CONVECTOR, FINNED PIPE, & UNIT HEATER LIST

REFERENCE PLANS

1

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	12-7-71	2-3	B/M REVISED AS FOLLOWS: ITEM FH-48 INCR. FR. 1 TO 2; FH-49 3 TO 4; FS-4 10 TO 14; FS-5 12 TO 16. ITEMS FH-30, FH-52, FH-76, FH-77, FH-82, AND FH-83 ADDED	P.G.	G.G.S. LTR. 1-10-72
2	2/1/72	5-C	1. UPPER DECK FR.238. REVISED PIPE SUPPLY & DRAIN LINES TO SUIT RELOC. HTR. ITEM #13 ON FCSLE DK. PER G.G.S. CO. LTR. JAN. 10 1972. (3514/3485-10)	R.H.H.	
3	5-16-72	5	"UPPER DK.-FR. 236, PORT" ½" STM. & ½" DR. TO CONVECTOR (ITEM #13 FOCSLE DK.) REVISED, DUE TO RELOCATION OF CONVECTOR	P.G.	

HULL	DESIGN	CHARGE
H-4640		
H-4639	34,700 DWT CONTAINER SHIP	10-4639

JOB NO. 376 / 374

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ¼"=12" DATE 12-8-71
DRAWN P.G. APPROVED
TRACED APPROVED
CHECKED G. McC. APPROVED HBW

PLAN NO. M-4639-376-05-3 ALT. NO. 3

FWD. QTRS.
STEAM HEATING SYSTEM
UPPER DK & BELOW & L/M
AND
WHISTLE PIPING & L/M

APPROVAL LETTERS

HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-10-72				
A.B.S.	X				
U.S.C.G.					
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

M-461 28 SQ.FT.

DATE OF ISSUE	4639-40	4639-40	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.
ALTERATION	1	1	2	2	3
ENGINEERING DISTRIBUTION	12-10-71	12-20-71	2-2-72	2-21-72	5-18-72
OWNERS	5		2		2
AMERICAN BUREAU					
LLOYD'S R.S.					
U.S.M.A.					
U.S. NAVY					
U.S.C.G.	3			3	
JOINER CONT'R.					
OWNER'S INSP.		1	1		1
AM. BU. INSP.					
LLOYD'S INSP.					
U.S.M.A. INSP.		1	1		1
U.S. NAVY INSP.					
U.S.C.G. INSP.					
HULL DRAFT.-21	1	1	1		1
MACH. DRAFT.-22	1	1	1		1
ELEC. DRAFT.-23	1	1	1		1
OUTFIT DRAFT.-25					
ESTIMATING					
PARENTS-SHIP SUPT.	1				
PRODUCTION (BCD)					
ORDER DEPT.					
JOINER CONT. YARD					
NELSON-PLANNING	2				
TOTAL ENG'R. DIST.	14	5	7	3	7

YARD DISTRIBUTION	12-21-71	2-2-72	5-22-72
PLAN'G	1	1	1
A. J. DALBY	3	3	3
PIECE RATE-11	1	1	1
TEST DEPARTMENT			
STRUC. PLANNING			
GROUND ASSEMBLY			
NO. WAY			
NO. WAY			
NO. WAY			
NO. WAY			
STRUCT. SUPER.	2	2	2
OPTICAL DETAIL-45	2	2	2
WET DOCK			
PIPE SHOP-52	8	8	8
OUTFIT. #1 PIER			
PIPE DRAFT.-52	2	2	2
BOILER SHOP-58			
OUTSIDE MACH.-60	2	2	1
Q-MAT'L	2	2	1
ELECTRIC SHOP-70			
SHEET MET. SHOP-74	3	3	2
COPPER SHOP-51	2	2	2
PAINT SHOP-75	1	1	1
WELDING	1	1	1
MOLD LOFT-41	1	1	1
BRACKET SHOP			
ORDER DEPT.	1	1	1
TOTAL YARD DIST.	34	34	29

4639-40-ALT 3

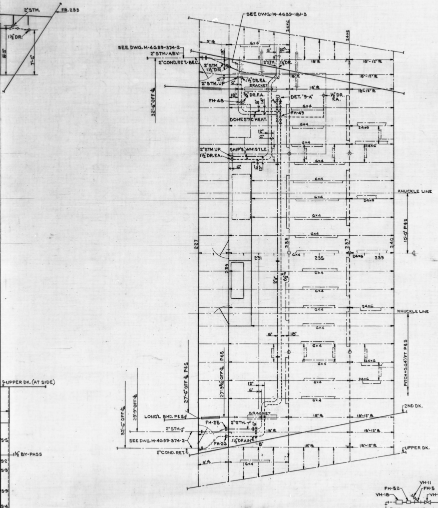
F

1

M-4639-376-05-3
ALT. 3

M-461

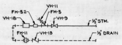
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



2ND DK.

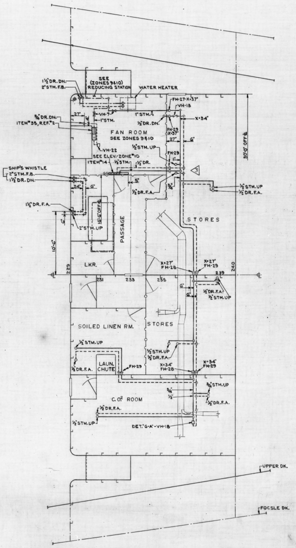
DECK HEIGHT AT ℄ = 11'-0"

SEE SECTIONS AT ZONES 7&8



DET. "6-A"

STEAM LINE DRIP - "UPPER DK."



UPPER DK.

7 6 5 4

BILL OF

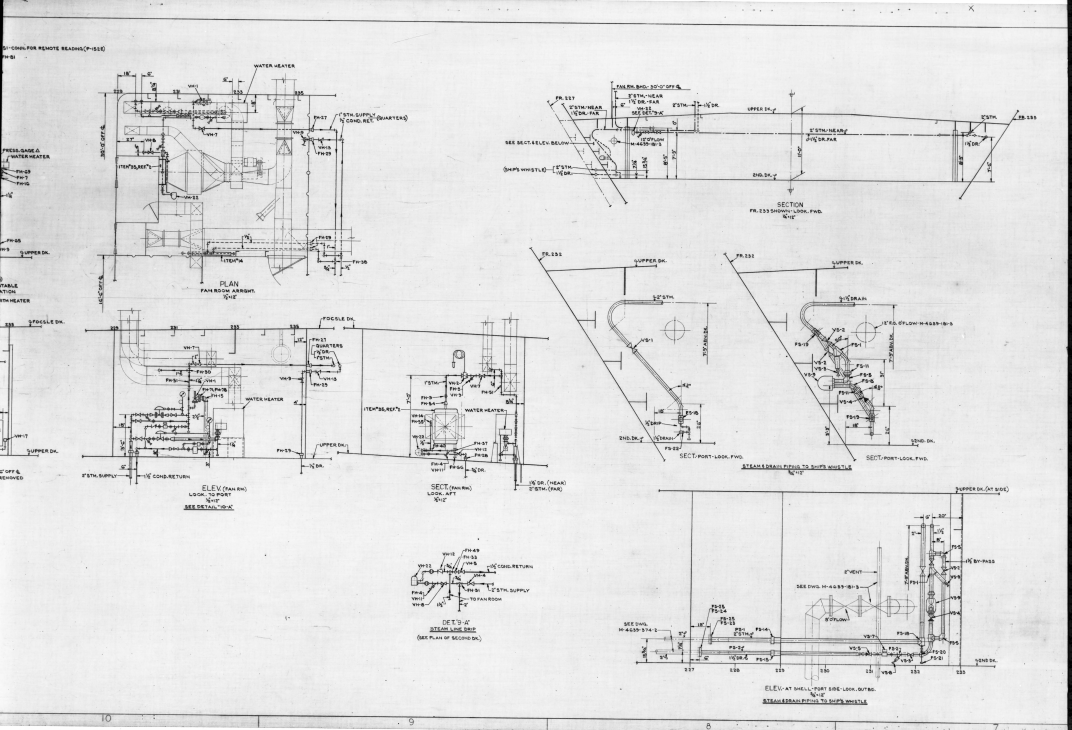
ITEM NO.	QUAN.	SIZE	MATERIAL	DESCR
PH-1	6'	2½"	STL.	PIPE-STD.WT.-B
PH-2	102'	2"		
PH-3	112'	1½"		
PH-4	35'	1¼"		
PH-5	10'	1"		
PH-6	114'	¾"		-EX.HVY.-
PH-7	760'	½"		
PH-8	12'	⅜"		
PH-9				
VH-1	1	1½"	STL.	RELIEF VALVE-F
VH-2	1	1"	—	TEMPERATURE R
VH-3	1	½"	STL.	PRESSURE REDUC
VH-4	1	2"	F. STL.	GLOBE VALVE-
VH-5	2	1½"		
VH-6	1	1¼"		
VH-7	3	1"		
VH-8	4	¾"		
VH-9	6	½"		
VH-10	1	⅜"		
VH-11	5	¼"		
VH-12	2	¾"	F. STL.	CHECK VALVE-
VH-13	4	½"		
VH-14	1	⅛"	BRASS	PET COCK
VH-15	1	¾"		RADIATOR VALV
VH-16	13	½"		
VH-17	14	½"	BRASS	RADIATOR TRAP
VH-18	1	½"		
VH-19	1	½"	CRES	IMPULSE TRAP
VH-20	1	½"	SEMI STL.	INV. BUCKET TR
VH-21	1	1"		
VH-22	2	¾"		FLOAT TRAP
FH-1	1	—	—	PRESSURE GAGE
FH-2	1	1½"	F. STL.	STRAINER-S.W.
FH-3	2	1"		
FH-4	3	¾"		
FH-5	2	½"		
FH-6				
FH-7	2	2"	F. STL.	UNION-S.W.
FH-8	3	1½"		
FH-9	6	1"		
FH-10	10	¾"		
FH-11	46	½"		
FH-12	2	⅜"		
FH-13	6	1¼"		-SCRD.
FH-14				
FH-15	1	2½"	F. STL.	90° ELBOW-S.W.
FH-16	8	2"		
FH-17	10	1½"		
FH-18	5	1¼"		
FH-19	6	1"		
FH-20	12	¾"		
FH-21	120	½"		
FH-22	1	1¼"×½"		90° ELBOW-SCR
FH-23	1	½"		
FH-24	1	1½"×1¼"	F. STL.	90° ELBOW-S.W.
FH-25	2	2"	STL.	STUFFING BOX-F
FH-26	2	1½"		
FH-27	1	1"		
FH-28	8	¾"		
FH-29	44	½"		
△1 FH-30	1	1¼"×1"×1"	F. STL.	TEE-S.W.
FH-31	1	2"×¾"×2"	F. STL.	TEE-S.W.
FH-32	1	2"×¾"×1½"		
FH-33	1	1½"×¾"×1½"		
FH-34	1	1¼"×¾"×1¼"		
FH-35	1	1¼"×1"×1¼"		
FH-36	1	1"×1"×½"		
FH-37	1	1"×1"×¾"		
FH-38	1	1"×¾"×½"		
FH-39	4	¾"×½"×¾"		
FH-40	7	¾"×¾"×½"		
FH-41	20	½"		
FH-42	2	¾"		
FH-43	1	1¼"		
FH-44	1	½"	F. STL.	TEE-SCRD.
FH-45	2	⅜"		
FH-46				
FH-47	1	1"×2" RUN	F. STL.	SOCKOLET-SCH.#8
△1 FH-48	2	¾"×2" RUN		
△1 FH-49	4	½"×2" RUN		
FH-50	2	⅜"×2" RUN		THREDOLET-SCH.#
FH-51	1	¼"×2" RUN		
△1 FH-52	1	½"	F. STL.	COUPLING-SCRD.
FH-53	1	1¼"×¾"	F. STL.	REDUCING COUPLIN
FH-54	1	1¼"×1"		
FH-55	1	½"×⅛"		
FH-56	1	2"×1"		
FH-57	1	1½"×1"		
FH-58	1	1¼"×½"		
FH-59	1	¾"×½"		
FH-60	20	½"	F. STL.	COUPLING-S.W.
FH-61	5	¾"		
FH-62	6	1½"		
FH-63	1	1½"×1"		REDUCING INSERT
FH-64				
FH-65	1	1¼"	F. STL.	CAP-SCRD.
FH-66	1	1"		
FH-67	1	¾"		
FH-68	1	½"		PLUG-SCRD. HEX.
FH-69	1	3"×2"		BUSHING-SCRD.
FH-70				
FH-71	1	2½"	F. STL.	FLANGE-150#-S.W.
FH-72	9	2"		
FH-73	1	1½"×6" O.D.		
FH-74	2	½"		
FH-75	1	1½"		-300#-S.W.

F 2

M-4639-376-05-3 ALT. 3

M-461

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

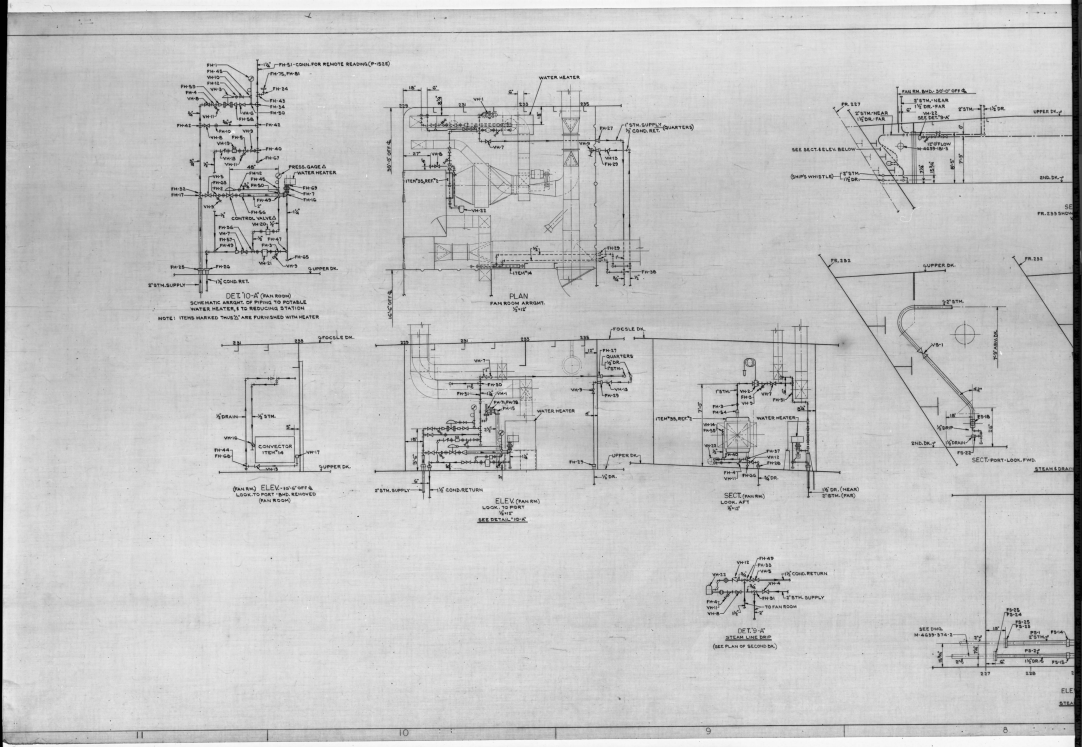


F 3

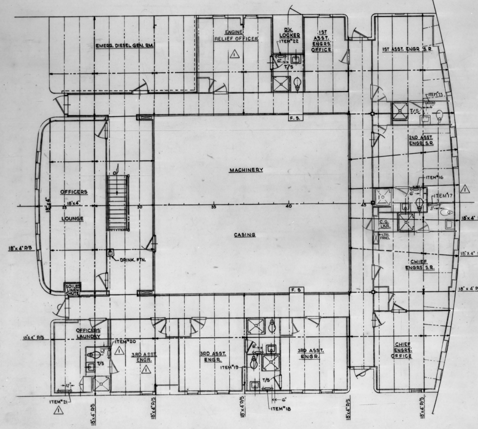
M-4639-376-05-3
ALT. 3

M-461

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



F 4
M-4639-376-05-3
ALT. 3
M-461
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



"B" DECK
DECK HEIGHT 9'-0"
OVHD. DK. BEAMS 5"x3" OR AS NOTED

NOTES

1-FOR GENERAL NOTES, AND "LIST OF MATERIAL" SEE REF. #4
2-CONVECTORS ARE LISTED ON REF. #1
3-BLAST HEATERS ARE LISTED ON REF. #5

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	12/1/71	3-B-D	1. "B" DECK. ENGINE RELIEF OFFICER & 3RD. ASS'T. ENG. S.R. INTERCHANGED PER PLAN DEVELOPMENT.	RHH	GGS LTR. 1-21-72
		3-A	2. "B" DECK. OFFICERS LAU. ITEM #21 RELOCATED PER PLAN DEV.		
		2-B 3-C	3. "B" DECK. CH. ENG'R. S.R. T.S. ITEM #17 RELOCATED. 3RD. ASS'T. ENG'R. ITEM #20 RELOCATED. PER G.G.S. CO. LTR.-10-18-71 FILE REF. 4639-376-22-31.		
		5-A-C	4. "A" DECK REVISED PIPING TO SUIT RELOCATION OF ITEMS #17 #20 & #21		
2	1/26/72	8-C	1. RELOCATED ICE CUBE MAKER, FROM PORT TO STBD.-PER PLAN DEVELOP.	RH.H	
3	12/8/72	8-A	1. REVISED RUN OF 1/2" STM. & 1/2" DR. LINES ON STBD SIDE UPPER DK FROM BTWN FRS 41-42 TO FRS 40-41 TO CLEAR ACCOMMODATION LADDER STOWAGE.	W.H.T.	
4	7-25-73	8	IN "PLAN OF UPPER DK" FR. 40 PORT, 1/2" DRAIN LINE REVISED AS SHOWN TO CLEAR HOIST MOTOR CABLE REEL (SCN #198)	P.G.	

HULL	DESIGN	CHARGE
4640	↑ ↑ ↑	10-4639
4639	PACIFIC FAR EAST CONTAINER SHIP	10-4639

JOB NO. 376

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE 1/4"=12" DATE 7 OCT. 1971
DRAWN G.L.W. APPROVED
TRACED APPROVED
CHECKED G. McC. APPROVED [illegible]

PLAN NO. M-4639-376-05-4 ALT. NO. 4

STM. HEATING SYS.-AFT QTRS.
UPPER DK. & ABOVE

APPROVAL LETTERS					
HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-9-71				
A.B.S.	X				
U.S.C.G.					
LLOYD'S R.S.	X				
U.S.P.H.S.					

REFERENCE PLANS

NO.	PLAN NO.	TITLE
5	↑ -191-2	VENTILATION A/C FAN & COIL LIST
4	↑ -5	-AFT QTRS.-2ND DK. & BEL.
3	-3	-UPPER DK. & BEL.
2	-2	STM. HEATING SYS.-FWD. QTRS.-FOCSLE DK. & ABV.
1	M-4639-376-05-1	CONVECTOR LIST

4639-40
4639-40
4639-40 REPL.
4639-40 REPL.
4639-40 REPL.
4640 REPL.

	DATE OF ISSUE					
ALTERATION	0	0	1	2	3	4
ENGINEERING DISTRIBUTION	10-8-71	11-24-71	12-11-71	2-10-72	12-11-72	7-26-73
MAIL: OWNERS	1		4	2	2	3
AMERICAN BUREAU						
LLOYD'S R.S.						
U.S.M.A.						
U S NAVY						
U.S.C.G.	3					
JOINER CONT'R.						
INSPECTION: OWNER'S INSP.		1	1	1	1	1
AM. BU. INSP.						
LLOYD'S INSP.						
U.S.M.A. INSP.		1	1	1	1	1
U.S. NAVY INSP.						
U.S.C.G. INSP.						
OFFICE: HULL DRAFT.-21	1	1	1	1	1	1
MACH. DRAFT.-22	1	1	1	1	1	1
ELEC. DRAFT.-23	1	1	1	1	1	1
OUTFIT DRAFT.-25						
ESTIMATING						
ROBERTS-SHIP SUPT.	1					
MISC.: PRODUCTION (BCD)						
ORDER DEPT.						
JOINER CONT. YARD						
NELSON-PLANNING	2					
TOTAL ENG'R. DIST.	15	5	9	7	7	8
YARD DISTRIBUTION	11-[illegible]-71	12-17-71	2-11-72	12-11-72	7-26-73	
YARD: PLAN'G	1	1	1	1	1	
A. J. DALBY	3	3	3	3	3	
PIECE RATE-11	1	1	1	1	1	
TEST DEPARTMENT						
STEEL PLANNING						
STRUCTURAL: GROUND ASSEMBLY						
NO. WAY						
NO. WAY						
NO. WAY						
NO. WAY						
STRUCT. SUPER.						
OPTICAL DETAIL-45	2	2	2	2	2	
WET DOCK						
MACH'Y & OUTFIT: PIPE SHOP-52	8	8	8	6	6	
OUTFIT. #1 PIER						
PIPE DRAFT.-52	2	2	2	2	2	
BOILER SHOP-58						
OUTSIDE MACH.-60	2	2	2	2	2	
ELECTRIC SHOP-70	1	1	1	1	1	
SHEET MET. SHOP-74	3	3	3	3	3	
COPPER SHOP-51	2	2	2	2	2	
PAINT SHOP-75	1	1	1	1	1	
OTHER: WELDING	1	1	1	1	1	
MOLD LOFT-41	1	1	1	1	1	
BRACKET SHOP						
ORDER DEPT.	1	1	1	1	1	
TOTAL YARD DIST.	29	29	29	27	27	

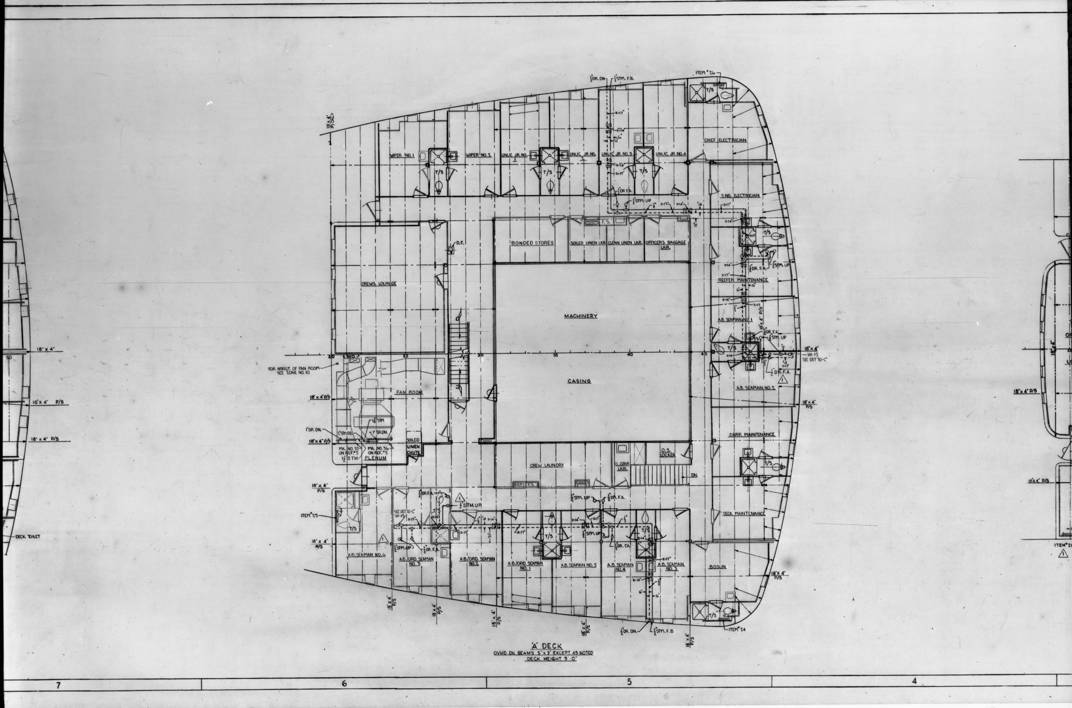
4639, 40-ALT. 3
4640-ALT. 4

3 2 1

M-462 31.25 SQ. FT.

M-4639-376-05-4
S4S. 44 ALT. 4
M-462

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

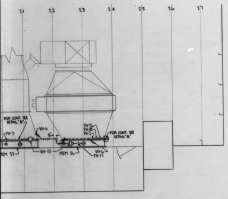


F 2

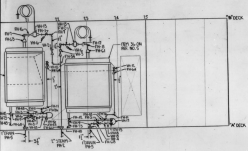
M-4639-376-06-4 S-45.44 ALT.4

M-462

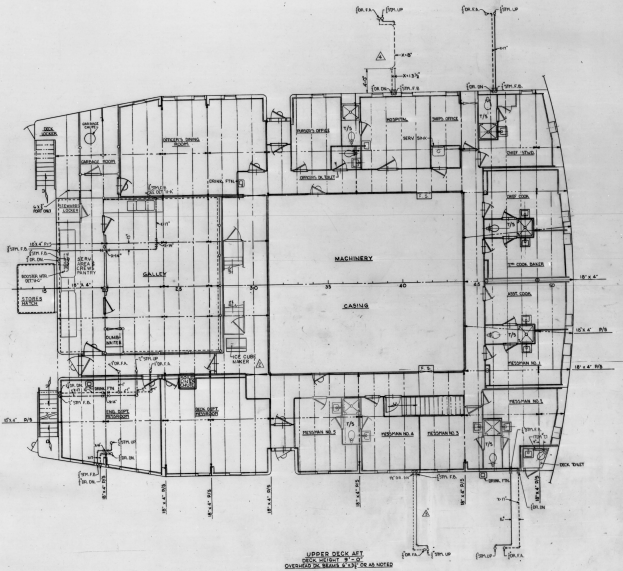
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



PLAN
FAN ROOM-'A' DECK
DETAIL 10-A

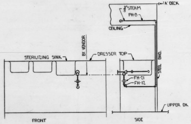


ELEVATION 10-B



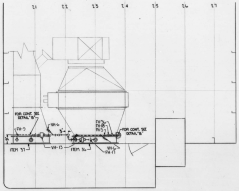
UPPER DECK AFT
DECK HEIGHT 9'-0"
OVERHEAD DK BEAMS 6'-3" OR AS NOTED

F 3
M-4636-376-054
5-15-44
M-462
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



DETAIL "11-A"

TYPICAL SINK HEATER



PLAN

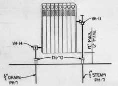
FAN ROOM-"A" DECK

1/2"=1'-0"

DETAIL "10-A"

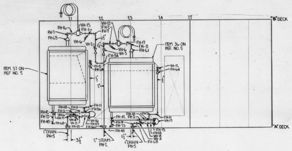
MODEL "A"

"SHAW PERKINS" CONVECTOR



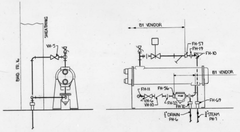
DETAIL "11-B"

CONVECTOR PIPING - TYPICAL



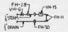
ELEVATION "10-B"

1/2"=1'-0"



DETAIL "11-C"

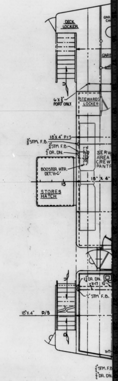
STEAM BOOSTER HEATER (GALLEY)



PLAN

DETAIL "10-C"

STM. LINE DRIP - FR. 25 & FR 50 PORT ON "A" DECK



F 4
M-4639-376-06-4 S4S.44 ALT.4
M-462
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

	REMARKS	A.S.T.M. SPEC.	REQN. NO.
E	RUN & OUTLET I.P.S.	A-105 GR II	39382-E
50	FLAT FACED A.N.S.I. B-16.5		39383-N
60			39-84-1431
5	A.N.S.I. B-16.9 (2)	A-234 GR.WPA	39380-N
	A.N.S.I. B-16.11	A-105 GR. II	39-84-1431

BILL OF MATERIAL (FOR ONE SHIP)

REV.	ITEM NO.	NO. REQD.	SIZE	MATERIAL	DESCRIPTION	MFGR OR REF. DWG	REMARKS	A.S.T.M. SPEC.	REQN. NO.
	PH-1	131FT.	2½"	STL., BLACK	PIPE, STD. WT.			A.S.T.M. A-53	39-376-05-5-71[illegible]
	PH-2	81FT.	2"						
	PH-3	136FT.	1½"						
	PH-4	225FT.	1¼"						
	PH-5	184FT.	1"						
	PH-6	330FT.	¾"		PIPE, EX. HVY.				
	PH-7	1310FT.	½"						
	PH-8	20FT.	⅜"						
	VH-1	1	2½"	CAST STEEL	150# FLGD. GATE VALVE, F/D.-O.S.&Y.	POWELL FIG.#1503	CRES TRIM	A-216 GR WCB	39490
	VH-2	2	1½"	FORGED STEEL	600# SOCK. WLD. GLOBE VALVE B.B.	ROCKWELL FIG.#848Y	STAINLESS STEEL TRIM	A-105 GR II	(2) 39490-A [illegible] 39490-1X
	VH-3	4	1⅛"						(7) 39490 (1) 39490-1X
	VH-4	5	1"		U.B.	ROCKWELL FIG.#2698Y			39490
	VH-5	6	¾"						(2) 39490-A (10) 39490
	VH-6	9	½"		600# GLOBE VALVE-SCRD.	ROCKWELL FIG.#2698			39490
	VH-7	2	¼"						
	VH-8	3	1"		HORIZ. BALL CHECK VALVE-S.W.	ROCKWELL FIG.#2672Y			
	VH-9	2	¾"						
	VH-10	6	½"						(3) 39490-1X (3) 39490
	VH-11	17	½"	BRASS	200# ANG. RADIATOR VALVE-U.B. SCRD.	CRANE FIG.#4271	METAL DISC.		39490
	VH-12	5	⅛"		PET COCK SCRD.	FIG.#102			39490
	VH-13	4	1½"	———	TEMPERATURE REGULATOR	———	ORDED ON SPEC.		39016-B
	VH-14	17	½"	BRASS	RADIATOR TRAP-ANGLE	SARCO TYPE S-65			393812-B
	VH-15	4	½"		RADIATOR TRAP-STRAIGHTWAY				
	VH-16	1	1¼"	SEMI-STEEL	FLOAT-TRAP-THERMOSTATIC	SARCO TYPE FTR-1			
	VH-17	2	1"			TYPE FT-75			
	VH-18	2	¾"						
	FH-1	1	1½"	FORGED STEEL	600# STRAINER-SOCKET WELD	ROCKWELL FIG.238Y		A-105 GR II	393811-F
	FH-2	3	1¼"						
	FH-3	3	1"						
	FH-4	2	¾"						
	FH-5	7	2½"		90° ELBOW-BUTT WELD-L.R.-STD. WT.	TUBE TURN PT.NO.1		A-234 GR WPB	39-84-1431
	FH-6	12	2"	FORGED STEEL	90° ELBOW-S.W.	W/S FIG.#470	A.N.S.I.-B-16.9 (2)	A-105-GR.II	
	FH-7	13	1½"						
	FH-8	35	1¼"						
	FH-9	22	1"						
	FH-10	27	¾"						
	FH-11	188	½"						
	FH-12	10	⅜"						
	FH-13	5	1"	FORGED STEEL	90° STREET ELBOW-SCRD.	W/S FIG.#730			39381-F
	FH-14	7	¾"						
	FH-15	3	2"		3000LB. UNION-S.W. STEEL TO STEEL SEATS	W/S FIG.#9820			39-84-1431
	FH-16	3	1½"						
	FH-17	3	1¼"						
	FH-18	11	1"						
	FH-19	9	¾"						
	FH-20	52	½"						
	FH-21	3	⅜"						
	FH-22	3	1¼"		3000 LB. UNION-SCRD.	W/S FIG.#9800			
	FH-23	2	2"	FORGED STEEL	3000 LB. COUPLING-S.W.	W/S FIG.#1070			
	FH-24	7	1½"						
	FH-25	4	1¼"						
	FH-26	5	1"						
	FH-27	10	¾"						
	FH-28	9	½"						
	FH-29	2	⅜"						
	FH-30	1	2½"X2"X1½"	FORGED STEEL	TEE-S.W.	W/S FIG.#570			39381-F
	FH-31	1	2"X¾"X2"						
	FH-32	1	1½"X1¼"X1"						
	FH-33	1	1¼"X1"X1"						
	FH-34	1	2"X1¼"X1½"						
	FH-35	1	1¼"X1"X½"						
	FH-36	6	1"X1"X½"						
	FH-37	1	1"X½"X1"						
	FH-38	9	¾"X¾"X½"						
	FH-39	4	¾"X½"X¾"						
	FH-40	1	¾"X¾"X⅜"						
	FH-41	30	½"						39-84-1431
	FH-42	2	1¼"X1¼"X1"		TEE-SCRD.	W/S FIG.#530			39381-F
	FH-43	7	½"						39-84-1431
	FH-44	2	2"		3000LB CROSS-SCRD.	W/S FIG.#830			39881-F
	FH-45	2	1¼"						
	FH-46	2	1"						
	FH-47	1	2"	FORGED STEEL	3000LB. CAP-SCRD.	W S FIG.#1330			
	FH-48	3	1¼"						
	FH-49	1	1"						
	FH-50	2	2"X¾"		HEX BUSHING-SCRD.	W/S FIG.#1430			
	FH-51	2	2"X½"						
	FH-52	7	1½"X1¼"						39-84-1431
	FH-53	6	1¼"X1"						
	FH-54	2	1¼"X½"						
	FH-55	2	1"X½"						
	FH-56	2	¾"X½"						
	FH-57	2	1"X¾"						
	FH-58	2	1"X¾"		FLUSH BUSHING-SCRD.	W/S FIG.#1530			39381-F
	FH-59	5	½"	FORGED STEEL	SCRD. COUPLING	W/S FIG.#1030			39-84-1431
	FH-60	6	½"	FORGED STEEL	SCRD. PIPE PLUG	W/S FIG.#1630			
	FH-61	1	2"X1¼"		REDUCER-SCRD.	W/S FIG.#1130			39381-F
	FH-62	1	1½"X1¼"						
	FH-63	1	2½"X1½"						
	FH-64	6	½"X⅜"						
	FH-65	1	2"X1"						
	FH-66	3	2"	STEEL	SUFFING BOX-STD. PIPE SIZE	ANVIL TYPE 250	POLYACRYLIC GASKET COMPOUND NO.9170 IN COMPRESSION NUTS		393810-D
	FH-67	2	1¼"						
	FH-68	4	1"						
	FH-69	3	¾"						
	FH-70	48	½"						
	FH-71	2	⅜"						
	FH-72	1	2"	STEEL	NIPPLE-SCRD.-STD. WT.-6" LONG		A.N.S.I.-B-16.9 (2)	A-53	39381-F
	FH-73	3	1¼"						
	FH-74	1	1"						

3

GENERAL NOTES

1. ALL STEAM SHALL BE DISTRIBUTED AT 35 PSIG.
2. BENDS SHALL BE USED IN LIEU OF ELBOWS WHERE PRACTICABLE - THE RADIUS OF THE BEND TO THE ℄ OF THE PIPE SHALL BE FIVE TIMES THE NOMINAL SIZE OF PIPE.
3. ALL PIPING SUBJECT TO MECHANICAL INJURY SHALL BE ADEQUATELY PROTECTED.
4. ALL VALVE HANDWHEELS SHALL BE ACCESSIBLE, OR EXTENSION STEMS SHALL BE PROVIDED WHERE NECESSARY.
5. PENETRATIONS THRU NON-TIGHT BULKHEADS, TRANSVERSES AND LONGITUDINALS ARE TO ALLOW FOR FULL THICKNESS OF INSULATION UNLESS OTHERWISE NOTED.
6. FOR PENETRATIONS THRU W.T. BULKHEADS & W.T. DECKS STUFFING BOXES SHALL BE USED.
7. PIPES TO BE INSULATED IN ACCORDANCE WITH INSULATION SCHEDULE.
8. PIPE HANGERS SHALL BE INSTALLED SO AS NOT TO RESTRICT THE MOVEMENT OF THE PIPE DUE TO EXPANSION.
9. PROVISION FOR EXPANSION IN STEAM LINES SHALL BE MADE BY MEANS OF OFFSETS OR "U" BENDS.
10. ALL PIPING IN LOCATIONS SUBJECT TO FREEZING SHALL BE INSTALLED SO THAT PIPING MAY BE THOROUGHLY DRAINED.
11. PIPING FOR STEAM HEATING SYSTEM WILL BE DETAILED UNDER SYSTEM #44.
12. CONNECTORS & UNIT HEATERS ARE LISTED ON REF. #1.
13. VENTILATION (BLAST) HEATERS ARE LISTED ON REF #5.

LEGEND

———————— INTERMITTENT STEAM
——-——— CONSTANT STEAM
- - - - - - - - DRAIN
STM - STEAM
DR. - DRAIN
F.A. - FROM ABOVE
F.B. - FROM BELOW
DN. - DOWN

NO.	PLAN NO.	TITLE
5	M-4639-191-2	VENTILATION FAN & COIL LIST
4	-4	-AFT QTRS.-UPPER DK.&ABV.
3	-3	-UPPER DK.&BEL.
2	-2	STM. HEATING SYS.-FWD. QTRS.-FOCSLE DK.&ABV.
1	M-4639-376-05-1	CONVECTOR LIST

REFERENCE PLANS

2

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	12/6/71	6-C	1. 2ND. DK.-DECK TOILET (P) ITEM 17 RELOC'D. ADDED VH-6 TO DET. "11-B" CHANGE MADE TO COMPLY WITH G.G.S. CO. LTR. 10-18-71. FILE REF. 4639-376-22-31.	RHH	GGS LTR. 1-21-72
		6-A	2. RELOCATED ENG. WORKSHOP DR. & ITEM #28 FOR MONORAIL INTF.		
2	12/22/71		1. ADDED A.N.S.I. STD. NO'S. TO L/M PER U.S.C.G. LTR. DATED 12-14-71	R.H.H.	
3	2/1/72		1. ADDED A CHECK VALVE IN DRIP STATION DR. LINE OF DET. "11-B" CHG. MADE TO COMPLY WITH G.G.S. CO. LTR. 1-25-72.	RH.H	
4	7-24-72	6-7	IN PLAN OF 2ND DK., CHANGED "X" DIMENSIONS OF STM. & DRAIN LINES IN FORE & AFT PASSAGE P&S AS FOLLOWS: IN PORT PASSAGE, CHANGED "X" DIM. FROM 27" TO 26", AND IN STBD. PASSAGE, CHANGED "X" DIM. FROM 25" TO 26" AND 26½"	P.G.	
5	9-22-72	5-11	1-ON 2ND DK, FRS. 63 & 64, STBD. REVISED "X" DIM. FOR STM. & DR. LINES IN ATHWARTSHIP PASSAGE TO CLEAR CABLE RACK AS PER S.C.N. NO. 37. DET. "11-A" REV. TO SUIT.	T.G.N.	
	10/5/72	8	2-CONVECTOR #30 IN DK. MAINT. SHOP MOVED FWD. TO 9" AFT FR. 6 TO CLEAR CO2 BOTTLES. S.C.N. #54.	L.W.N.	
		6	3-CONVECTOR #29 IN ELEC. SHOP MOVED FROM BHD. 44 TO LONG'L. BHD. TO CLEAR SHELVING. SEE H-4639-232-18. S.C.N. #60.		
6	12/8/72	6-A	1. REVISED RUN OF ½" STM. & ½" DR. LINES BTWN FRS 41-42 ON STBD SIDE "A" DK TO BTWN FRS. 40-41 TO CLEAR ACCOMMODATION LADDER STOWAGE.	W.H.T.	

HULL	DESIGN	CHARGE
4640		10-4639
4639	PACIFIC FAR EAST CONTAINER SHIP	10-4639

JOB NO. 376

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE ¼"=12" & AS NOTED — DATE 7 OCT. 1971
DRAWN G.L.W. — APPROVED
TRACED — APPROVED
CHECKED G. McC. — APPROVED [illegible]

PLAN NO. M-4639-376-05-5 — ALT. NO. 6

STM. HEATING SYS.-AFT QTRS.
2ND. DK. & BELOW & L/M

APPROVAL LETTERS

HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	11-9-71				
A.B.S.	X				
U.S.C.G.	12-14-71				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

1

M-463

DATE OF ISSUE

	4639-40	4639-40	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.
ALTERATION	0	0	1	2	3	4	5	6
ENGINEERING DISTRIBUTION	10-8-71	11-15-71	12-11-71	1-5-72	2-10-72	7-26-72	10-6-72	12-11-72
OWNERS	1		4		2	2	2	2
U.S.C.G.	3							
OWNER'S INSP.		1	1	1	1	1	1	1
U.S.M.A. INSP.		1	1	1	1	1	1	1
HULL DRAFT.-21	1	1	1	1	1	1	1	1
MACH. DRAFT.-22	1	1	1	1	1	1	1	1
ELEC. DRAFT.-23	1	1	1	1	1	1	1	1
PARTS-SHIP SUPT.	1							
NELSON-PLANNING	2							
TOTAL ENG'R. DIST.	15	5	9	5	7	7	7	7
PLAN'G	1	1	1	1	1	1	1	
R.J. DALBY	3	3	3	3	3	3	3	
PIECE RATE-11	1	1	1	1	1	1	1	
TRAIL & TELL	1	1	1	1	1	1	1	
STRUCT. SUPER.	2	2	2	2	2	2	2	
OPTICAL DETAIL-45	2	2	2	2	2	2	2	
PIPE SHOP-52	8	8	8	8	4	4	4	
PIPE DRAFT.-52	2	2	2	2	2	2	2	
OUTSIDE MACH.-60	2	2	2	2	1	1	1	
Q-MAT'L	2	2	2	2	1	1	1	
SHEET MET. SHOP-74	3	3	3	3	3	3	3	
COPPER SHOP-51	2	2	2	2	2	2	2	
PAINT SHOP-75	1	1	1	1	1	1	1	
WELDING	1	1	1	1	1	1	1	
MOLD LOFT-41	1	1	1	1	1	1	1	
ORDER DEPT.	1	1	1	1	1	1	1	
TOTAL YARD DIST.	33	33	33	27	27	27	27	

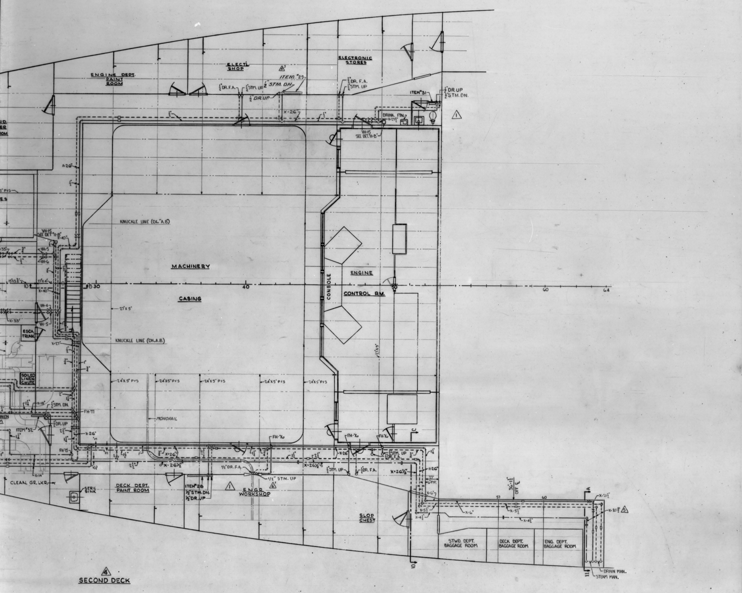
4639-40 - ALT. 4
4639-40 - ALT. 5
4639-40 - ALT. 6

____ SQ.FT.

M-4639-376-05-5
SYS. 44 ALT. 6
M-463

F 1

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



BILL OF MATERIAL (FOR ONE SHIP)

REV.	ITEM NO.	NO. REQD	SIZE	MATERIAL	DESCRIPTION	MFGR. OR REF. DWG.	REMARKS	A.S.T.M. SPEC.	REQN. NO.
	FH-75	2	1½"X2½"	FORGED STEEL	SOCKOLET - STD. WT. - 2½" RUN	BONNEY FORGE	RUN & OUTLET I.P.S.	A-105 GR. II	39382-E
	FH-76	4	½"X1½"	↓	- 1½" RUN	↓	↓	↓	↓
	FH-77	2	¾"X1½"		- 1½" RUN				
	FH-78	16	2½"	FORGED STEEL	150# SOCK. WELD. FLANGE	TUBE TURN PT #150	FLAT FACED A.N.S.I. B-16.5		39383-N
	FH-79	9	2½"	ASBESTOS	150# FULL FACE GASKET	JOHN MANVILLE #60			39-84-1431
	FH-80	2	2½"	SEAMLESS STEEL	45° ELBOW-BUTT WELD-STD. WT.-L.R.	TUBE TURN PT. #5	A.N.S.I. B-16.9 △2	A-234 GR. WPA	39380-N
	FH-81	3	2"	FORGED STEEL	45° ELBOW - SOCK. WELD	W/S FIG. #670	A.N.S.I. B-16.11	A-105 GR. II	39-84-1431
	FH-82	3	1½"	↓	↓	↓	↓	↓	↓
	FH-83	7	1¼"						
	FH-84	5	1"						
	FH-85	6	¾"						
	FH-86	38	½"						
	FH-87	2	⅜"						

7 | 6 | 5 | 4

F

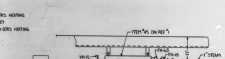
2

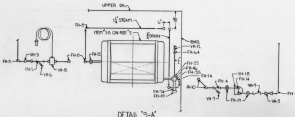
M-4639-376-05-5
Sys. 44 ALT. 6

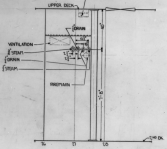
M-463

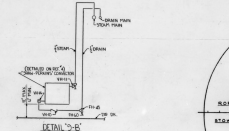
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

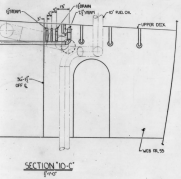
F 3
111-4634-37x05.5
Sys.MM 0226
MM-463
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

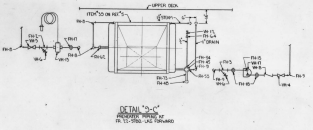


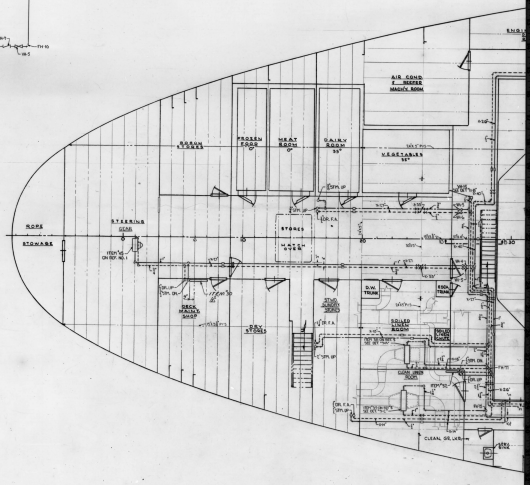


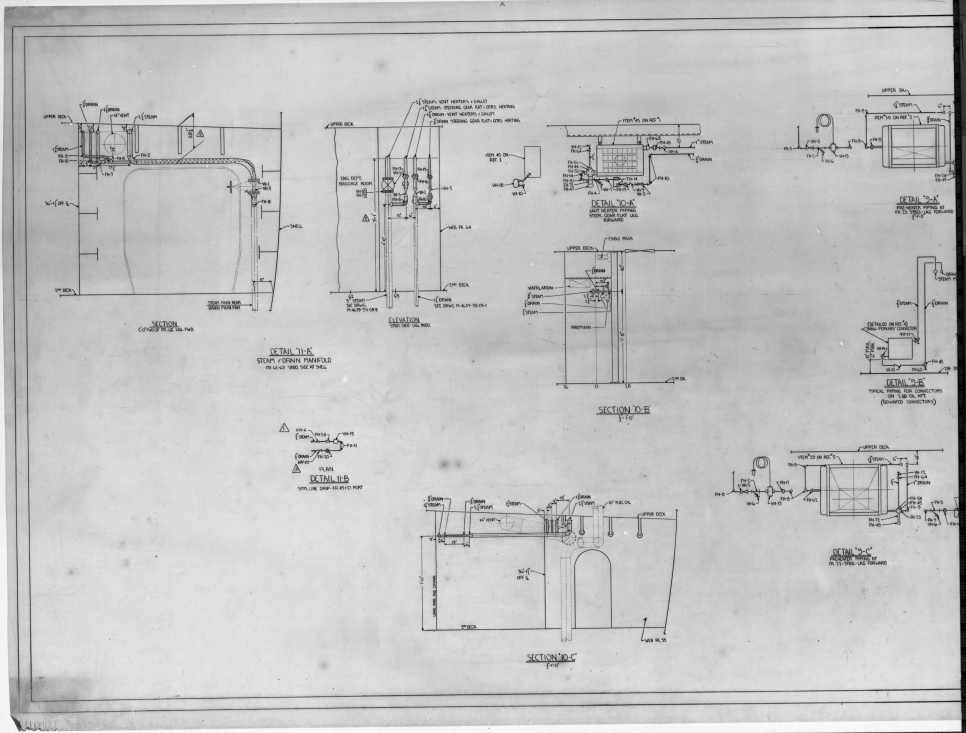












M-463

M-4639-376-05-5
Sys-44 ALT.6

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

4

METHODS OF APPLICATION

1. HIGH TEMPERATURE INSULATION (600°F. TO 1000°F.)
   - A. SINGLE LAYER INSULATION ON STRAIGHT PIPE SHALL BE SECURED AT 18" INTERVALS WITH Nº 18 B.W.G. ANNEALED IRON WIRE OR WITH METAL BANDS.
   - (3) B. WHERE PIPE INSULATION WITH A TOTAL THICKNESS OF 3 INCHES & OVER IS APPLIED IN TWO LAYERS, ALL JOINTS SHALL BE BROKEN. THE FIRST LAYER WITH ALL JOINTS TIGHTLY BUTTED SHALL BE SECURELY WIRED TO THE PIPE WITH Nº 18 B.W.G. ANNEALED IRON WIRE OR WITH METAL BANDS WITH SPACING NOT TO EXCEED 18". THE SECOND LAYER SHALL BE APPLIED OVER THE FIRST LAYER SO THAT BOTH CIRCUMFERENTIAL & HORIZONTAL JOINTS ARE STAGGERED & SHALL BE HELD IN PLACE WITH Nº 18 B.W.G. ANNEALED IRON WIRE OR WITH METAL BANDS WITH SPACING NOT TO EXCEED 18". ALL JOINTS ARE TO BE SEALED WITH HIGH TEMPERATURE INSULATING CEMENT. FINISH WITH LAGGING OF FIBROUS GLASS CLOTH ADHERED WITH LAGGING ADHESIVE.
   - C. ON BENT PIPE, WHERE THE RADIUS OF THE BENDS PERMITS, SEGMENTS OF MOLDED INSULATION SHALL BE USED & UNAVOIDABLE OPENINGS CLOSED WITH INSULATING CEMENT. WHERE THE PROCEDURE IS NOT FEASIBLE, BUILT-UP INSULATION MADE OF LAYERS OF INSULATING CEMENT MAY BE USED IN THIS CASE, THE INSULATION SHALL BE COVERED WITH A JACKET OF HARD SURFACE INSULATING CEMENT, REINFORCED WITH HARDWARE CLOTH.
   - (3) D. ALL SECTIONAL COVERING (BLOCK INSULATION) SHALL BE SECURELY FASTENED WITH Nº 18 B.W.G. GALV. ANNEALED WIRE OR WITH METAL BANDS, WITH ALL JOINTS SEALED WITH HIGH TEMPERATURE CEMENT. APPLY ONE (1) COAT OF ½" THICK HARD FINISH CEMENT & TROWEL TO A SMOOTH FINISH. FINISH WITH LAGGING OF FIBROUS GLASS CLOTH ADHERED WITH LAGGING ADHESIVE.
2. MEDIUM TEMPERATURE INSULATION (126°F. TO 599°F.)
   - A. THE MEDIUM TEMPERATURE INSULATION SHALL BE APPLIED & SECURED AS SPECIFIED FOR HIGH TEMPERATURE INSULATION.
3. LOW TEMPERATURE INSULATION (-30°F. TO 125°F.)
   - (3) A. INSULATION SHALL BE FOAMGLAS WIRED IN PLACE WITH 16 GA. GALV. STL. WIRE ON 8" CENTERS. ALL LONGITUDINAL AND BUTT END JOINTS SHALL BE VAPOR SEALED WITH BENJAMIN-FOSTER 31-26 ADHESIVE. FINISH WITH FIBROUS GLASS CLOTH LAGGING ADHERED WITH BENJAMIN-FOSTER 31-30 INSULFAS.
   - B. ALL SECTION COVERING (BLOCK INSULATION) SHALL BE SECURELY FASTENED WITH ALL JOINTS VAPOR SEALED WITH BENJAMIN-FOSTER 30-45 CEMENT. APPLY ONE (1) COAT OF ½" THICK HARD FINISH CEMENT AND TROWEL TO A SMOOTH FINISH. FINISH WITH LAGGING OF BRATTICE CLOTH ADHERED WITH LAGGING ADHESIVE.
4. VENTILATION & AIR CONDITIONING DUCTS
   - A. BOTH ROUND & RECTANGULAR DUCT JOINTS WILL BE VAPOR SEALED WITH BENJAMIN-FOSTER Cº "INSULFAS COATING" 31-30 & 30 INSULFAS CLOTH BY BETHLEHEM STEEL CORP.
   - (2) B. BOTH RIGID & SEMI-RIGID INSULATION JOINTS SHALL BE VAPOR SEALED WITH JOHNS-MANVILLE *PRESSURE SENSITIVE ALUMINUM FOIL TAPE.*
   - (2) C. INSULATION IS TO BE SUPPORTED ON THE UNDERSIDE OF RECTANGULAR DUCTS WITH ONE (1) ROW OF 12 GA. CADMIUM PLATED WELD STUDS & SPEED CLIPS ON MAXIUMUM OF 12" CENTERS. ON DUCTS GREATER THAN 24" WIDTH, TWO (2) ROWS OF WELD STUDS WILL BE REQUIRED. ALL WELD STUDS ARE TO BE CUT OFF FLUSH WITH INSULATION AND SEALED WITH JOHNS-MANVILLE *PRESSURE SENSITIVE ALUMINUM FOIL TAPE.*
5. SMOKESTACK & UPTAKES
   - A. THE CALCIUM SILICATE INSULATION SHALL BE HELD IN PLACE BY 18 GAGE GALV. STEEL WIRE THREADED THROUGH NUTS WELDED TO THE SMOKESTACK & UPTAKES ON 18" CENTERS.
   - B. A HEXAGON MESH GALVANIZED WIRE SHALL BE APPLIED OVER THE CALCIUM SILICATE INSULATION AFTER ALL JOINTS HAVE BEEN POINTED WITH INSULATING CEMENT.
   - (3) C. A ½" OF FINISH CEMENT SHALL BE APPLIED OVER THE CALCIUM SILICATE INSULATION, AND TROWELED TO A SMOOTH FINISH. FINISH WITH FIBROUS GLASS CLOTH ADHERED WITH LAGGING ADHESIVE.
6. WATER PIPING SYSTEMS IN MACHINERY SPACE
   - A. THE WATER PIPING SYSTEMS IN THE MACHINERY SPACE, THAT REQUIRE INSULATION, SHALL BE INSULATED WITH ANTI-SWEAT INSULATION TO A THICKNESS OF ½".
   - B. THE ONLY PIPES TO BE INSULATED ARE THOSE PIPES, THAT DUE TO DRIPPAGE MAY CAUSE DAMAGE TO EQUIPMENT OR DISCOMFORT TO OPERATING PERSONNEL.
7. STEAM HEATING SYSTEM
   - A. ALL HEATING PIPING SHALL BE INSULATED WITH JOHNS-MANVILLE "FIBROUS GLASS"
   - B. ALL INSULATION SHALL BE SECURED WITH WIRE.

GENERAL NOTES

1. ALL PIPING SHALL BE TESTED BEFORE APPLICATION OF INSULATION AND LAGGING.
2. ALL INSULATING MATERIALS USED SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE SPECIFICATION LISTED AND THE UNITED STATES COAST GUARD REGULATIONS.
3. ALL FLANGES VALVES & FITTINGS SHALL BE COMPLETELY INSULATED & LAGGED EQUAL TO THAT SPECIFIED FOR ATTACHED PIPING.
4. PIPING JOINTS (FLANGES, UNIONS, ETC.), VALVES & FITTING JOINTS WHICH MAY BE BROKEN FOR PERIODIC MAINTENANCE OR FOR REPAIRS, & VALVES FOR SERVICES SUBJECT TO FREQUENT ATTENTION SUCH AS REDUCING & REGULATING VALVES SHALL BE INSULATED WITH EASILY REMOVABLE TAILORED PADS.
   - A. PADS SHALL BE OF ASBESTOS CLOTH, IN ACCORDANCE WITH FEDERAL SPECIFICATIONS SS-C-466, OR FIBROUS GLASS CLOTH, IN ACCORDANCE WITH MILITARY SPECIFICATIONS MIL.-C-20079, FILLED WITH FELTED AMOSITE ASBESTOS OR QUILTED FIBROUS GLASS CONFORMING TO MILITARY SPECIFICATIONS MIL.-I-16411C.
5. (3) WHERE REMOVABLE TAILORED PADS ARE USED, THE PIPE INSULATION SHALL BE TAPERED OR A REMOVABLE REUSABLE COLLAR OF THE SPECIFIED INSULATION SHALL BE INSTALLED SO AS TO PERMIT THE READY REMOVAL OF ANY BOLTS & NUTS. THE PAD INSULATION SHALL OVERLAP THE OUTER BEVELLED EDGE OF THE PIPE INSULATION APPROXIMATELY 2 INCHES.
6. INSULATING CEMENTS
   - A. INSULATING FINISHING CEMENT SHALL BE IN ACCORDANCE WITH MILITARY SPECIFICATIONS SS-C-160. (JOHN MANVILLE - NO 352)
   - B. HIGH TEMPERATURE INSULATING CEMENT SHALL BE IN ACCORDANCE WITH MILITARY SPECIFICATIONS MIL-C-2861, TYPE B (JOHNS MANVILLE Nº 450)
   - C.
7. HIGH TEMPERATURE INSULATION (600°F. TO 1000°F.)
   - A. ALL PIPING HAVING A NORMAL INTERNAL DESIGN TEMPERATURE OF 600°F. & OVER SHALL BE INSULATED WITH HYDROUS CALCIUM SILICATE CONFORMING TO FEDERAL SPECIFICATIONS HH-I-523 & TO THE REQUIRED THICKNESS, OR WITH A COMBINATION OF HIGH TEMPERATURE & MEDIUM TEMPERATURE INSULATION TO THE MINIMUM THICKNESS INDICATED.
   - B. SINGLE LAYER MOLDED INSULATION MAY BE USED WHERE THERMAL CONDUCTIVITY & SURFACE TEMPERATURE REQUIREMENTS FOR MULTI-LAYER INSULATION ARE MET & PROVISION FOR THERMAL EXPANSION IS INCLUDED.
8. MEDIUM TEMPERATURE INSULATION (126°F. TO 599°F.)
   - A. ALL PIPING HAVING A NORMAL INTERNAL DESIGN TEMPERATURE BETWEEN 126°F & 599°F SHALL BE INSULATED WITH MATERIALS AND TO THE THICKNESS SPECIFIED IN THE INSULATION MATERIAL COLUMN FOR EACH INDIVIDUAL SYSTEM.
   - B. SINGLE LAYER MOLDED INSULATION MAY BE USED WHERE THERMAL CONDUCTIVITY & SURFACE TEMPERATURE REQUIREMENTS FOR MULTI-LAYER INSULATION ARE MET & PROVISION FOR THERMAL EXPANSION IS INCLUDED.
9. LOW TEMPERATURE INSULATION (-30°F. TO 125°F.)
   - A. WHERE THE SURFACE TEMPERATURE RANGES BETWEEN -30°F & 55°F THE INSULATION SHALL BE POLYURETHANE RIGID FOAM CONFORMING TO MARAD SPECIFICATION 32-MA-4 OR CELLULAR GLASS CONFORMING TO FEDERAL SPECIFICATIONS HH-I-551, TYPES I & II. CLASS SUITABLE FOR THE TEMPERATURE ENCOUNTERED.
   - B. WHERE THE SURFACE TEMPERATURE RANGES BETWEEN 56°F & 125°F THE INSULATION SHALL BE ANTI-SWEAT FLEXIBLE UNICELLULAR FOAM PLASTIC CONFORMING TO MILITARY SPECIFICATIONS MIL-P-15280D, TYPE II (JOHNS-MANVILLE AEROTUBE)
10. MACHINERY & EQUIPMENT INSULATION
    - A. THE INSULATION FOR MACHINERY & EQUIPMENT SHALL BE OF MOLDED FORMS WITH IN LIMITATIONS OF COMMERCIAL STANDARDS.
    - B. ALL INSULATION SHALL BE TIGHTLY WIRED OR BANDED TO PREVENT SETTLING & ALL JOINTS POINTED-UP WITH INSULATING CEMENT.
    - C. IN LIEU OF MOLDED INSULATION, MANHOLES, HANDHOLES, ETC., MAY BE INSULATED & LAGGED WITH REMOVABLE TAILORED PADS FABRICATED IN ACCORDANCE WITH GENERAL NOTE Nº 4A
    - D. LARGE CUMBERSOME PADS OF BLANKETS, OR A MULTIPLICITY OF PADS, SHALL NOT BE USED TO COVER LARGE SURFACES.
11. (2) VENTILATION & AIR CONDITIONING DUCTS
    - A. RECTANGULAR DUCTS & EQUIPMENT SHALL BE INSULATED WITH FIBROUS GLASS INSULATION WITH FACTORY APPLIED .0025" ALUMINUM FOIL WITH A MINIMUM DENSITY OF 3 PCF. THE INSULATION SHALL BE APPLIED WITH ADHESIVES AND ALL EDGES TIGHTLY BUTTED. ALL SEAMS ARE TO BE SEALED WITH 3" WIDE PRESSURE SENSITIVE ALUMINUM FOIL TAPE. EXPOSED RECTANGULAR DUCTS & EQUIPT. TO HAVE METAL CORNER ANGLES.
    - B. ROUND DUCTS SHALL BE INSULATED WITH FIBROUS GLASS INSULATION WITH FACTORY APPLIED .0025" ALUMINUM FOIL WITH A MINIMUM DENSITY OF 1 PCF. THE INSULATION SHALL BE APPLIED WITH ADHESIVES AND THE EDGES TIGHTLY BUTTED. ALL SEAMS ARE TO BE SEALED WITH 3" WIDE PRESSURE SENSITIVE ALUMINUM FOIL TAPE.
    - C. THE THICKNESS OF THE INSULATION SHALL BE EITHER ½" OR 1 AS INDICATED ON BETHLEHEM STEEL CORP. VENTILATION PLANS.
    - D. NO FURTHER INSULATION IS REQUIRED ON CONCEALED DUCTS. BOTH RECTANGULAR & ROUND DUCTS AND EQUIPMENT THAT ARE EXPOSED SHALL BE FINISHED WITH FIBROUS GLASS CLOTH. THE CLOTH SHALL BE FULLY ADHERED WITH A COMPATIBLE ADHESIVE.
12. SMOKESTACK & UPTAKES
    - A. THE INSULATION FOR THE SMOKESTACK & UPTAKES SHALL BE HYDROUS CALCIUM OF THE BLOCK TYPE. (JOHNS MANVILLE THERMOBESTOS OR EQUAL).
13. FLEXIBLE PIPE
    - A. FLEXIBLE PIPE IS TO BE COVERED WITH TAILORED PADS IN ACCORDANCE WITH GENERAL NOTE Nº 4A.
14. THE SPECIFIC MANUFACTURE NOTED, TYPE DESIGNATION OF MATERIAL AND INSULATION THICKNESS ARE INCLUDED TO CONTROL QUALITY OF MATERIAL DESIRED. A QUALITY OF MANUFACTURE EQUAL TO THAT SPECIFIED IS ACCEPTABLE SUBJECT TO THE FOLLOWING:
    - A. TEMPERATURE REQUIREMENT OF 125°F. SHALL BE ADHERED TO SO THAT INSULATION THICKNESS STATED MUST BE INCREASED BY A MANUFACTURER WHERE REQUIRED TO MEET TEMPERATURE LIMITATION.
15. PIPING IN OVERHEAD OF GALLEY AND EXPOSED PIPING IN GALLEY SHALL BE DOUBLE LAYER ANTI-SWEAT INSULATION, WATERPROOFED OUTSIDE OF EACH LAYER.
16. FIBROUS GLASS CLOTH TO BE MIL SPEC. C-20079 WHICH MAY BE SUBSTITUTED WHERE ASBESTOS CLOTH SS-C-466 IS USED.
17. (3) (2) 1" WIDE ASBESTOS TAPE IS TO BE APPLIED UNDER GALVANIZED WIRE FOR SECURING FOAM GLASS INSULATION ONLY, SO AS TO PRVENT THE WIRE FROM CUTTING INTO THE INSULATION. THREE (3) LOOPS OF GALVANIZED WIRE PER 3 FOOT SECTION IS REQUIRED. [FOUR (4) FOR PIPE OVER 6" I.P.S.]

REQN. 22-39055

ALTERATIONS

NO.	DATE	ZONE	DESCRIPTION	MADE BY	APP'D.
1	1-5-72		1. REVISED THE FOLLOWING ITEMS AS FOLLOWS: FROM TO — ITEM 299: STR. 500' 1034'; BENT. 60' 64'; VALS. 0 2; FLGS. 38 22; FITTS. 38 123. ITEM 300: STR. 300' 275'; BENT 50' 45'; VALS. 0 9; FLGS. 19 26; FITTS. 11 20. ITEM 301: STR. 575' 342'; BENT 75' 23'; FITTS. 157 100. ITEM 302: STR. 60' 88'; BENT 15' 6'; FITTS. 27 15. ITEM 303: STR. 15' 60'; BENT 0' 4'; FITTS. 11 8. 2. ADDED ITEMS 304 & 305	G.L.W.	
2	7-26-72		1. REVISED TYPE OF INSULATION, SPEC. & ADDED REMARKS TO ITEMS 299 THRU 305. 2. REVISED GEN. NOTES 11-A, 11-B, 11-C & 11-D TO REFLECT NEW MATERIALS TO BE USED FOR VENT. & A/C DUCTS. SPINTEX MAT'L IS NO LONGER MANUFACTURED. 3. ADDED GEN. NOTE 17 AS PER GG'S LETTER DATED 1-25-72. 4. UNDER "METHODS OF APPLICATION" REVISED NOTES 4-B & 4-C TO REFLECT NEW MAT'LS BEING USED. JOHNS MANVILLE B-FF FOIL TAPE IS NO LONGER MANUFACTURED. 5. REVISED ITEMS 234 TO 241 TO AGREE WITH NEW MATERIAL BEING USED FOR VENT. & A/C. 6. REVISED MATERIAL UNDER "DUCT INSUL-SKETCH A" TO AGREE WITH NEW MAT'L BEING FURNISHED. 7. REVISED INSULATING CEMENT FOR ITEMS 209 & 210. ABOVE ALTERATIONS MADE TO AGREE WITH G.G. SHARP LTR. NO. 3512/539 DATED JAN. 25, 1972.	JWL	
3	9-13-72		1. CHANGED LAGGING MATERIAL FROM ASBESTOS CLOTH TO FIBROUS GLASS CLOTH & SPEC. FROM FED. SPEC. SS-C-466 TO MIL. SPEC. MIL-C-20079 AS PER G.G. SHARP LTR. NO. 3512/539, DATED SEPT. 5, 1972. 2. CHANGED ASBESTOS CLOTH TO FIBROUS GLASS CLOTH IN NOTES 1B, 1D, 3A & 5C. 3. REVISED GENERAL NOTE NO. 5 AS PER AC&S LTR. DATED AUG. 30, 1972.		
	9-26-72		4. REVISED GEN. NOTE NO. 17	G.L.W.	
4	8-28-73		1. CHANGED COVERING OF FACE OF L.P. TURBINE, ITEM 317, FROM BLOCK TO PAD. REVISED QUANTITY ACCORDINGLY. 2. CHANGED COVERING OF ITEM 319, 2500 K.W. GEN. TURBINES FROM BLOCK TO PADS. 3. INCREASED QUANTITY OF ITEM 295, STRAIGHT, FROM 697' TO 727' WHICH NOW INCLUDES MOVING OF ICE MACHINE FROM THE OIL SKIN LOCKER TO FAN ROOM-UPPER DECK-FWD. 4. ADDED ITEMS 308, 309 & 310 COVERING WATER SERVICE LINES IN SHAFT ALLEY. 5. ADDED ITEM 69 FOR COVERING OF HANDWHEELS FOR PERSONAL PROTECTION. ABOVE CHANGES 1 TO 5 REFLECT A.C. & S. WORKS ORDERS 1 TO 4 FOR ADDITIONAL INSULATION WORK & CHANGES ACCOMPLISHED PRIOR TO FINAL DELIVERY.	JWL	

HULL	DESIGN	CHARGE
4640	↑	10-4639
4639	PACIFIC FAR EAST STEAMSHIP CO.	10-4639

JOB NO. 377

BETHLEHEM STEEL CORPORATION
SHIPBUILDING DIVISION
SPARROWS POINT, MD. 21219

SCALE NONE — DATE 22 DEC. 1971
DRAWN G.L.W. C.B. — APPROVED
TRACED — APPROVED
CHECKED J.W. Lawton — APPROVED

PLAN NO. M-4639-377-1 — ALT. NO. 4

INSULATION SCHEDULE
PIPING & MACHINERY

APPROVAL LETTERS					
HULL	4639-40				
APPROVED BY	DATE	DATE	DATE	DATE	DATE
OWNERS	1-25-72				
A.B.S.	X				
U.S.C.G.	X				
LLOYD'S R.S.	X				
U.S.P.H.S.	X				

NO.	PLAN NO.	TITLE

REFERENCE PLANS

		4639-40	4639-40	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4639-40 REPL.	4640 REPL.	4639-40 REPL.
	ALTERATION	1	1	2	2	3	3	4	4
	ENGINEERING DISTRIBUTION	1-5-72	1-31-72	7-26-72	8-10-72	9-22-72	9-28-72	8-28-73	10-23-73
MAIL	OWNERS	6		5		5		4	4
MAIL	AMERICAN BUREAU								
MAIL	LLOYD'S R.S.								
MAIL	U.S.M.A.								
MAIL	U.S. NAVY								
MAIL	U.S.C.G.								
MAIL	JOINER CONT'R.								
INSPECTION	OWNER'S INSP.		1		1		1	1	
INSPECTION	AM. BU. INSP.								
INSPECTION	LLOYD'S INSP.								
INSPECTION	U.S.M.A. INSP.		1		1		1	1	
INSPECTION	U.S. NAVY INSP.								
INSPECTION	U.S.C.G. INSP.								
OFFICE	HULL DRAFT.-21	1	1		1		1	1	
OFFICE	MACH. DRAFT.-22	1	1		1		1	1	
OFFICE	ELEC. DRAFT.-23	1	1		1		1	1	
OFFICE	OUTFIT. DRAFT.-25								
OFFICE	ESTIMATING								
OFFICE	ROBERTS-SHIP SUPT.	1							
MISC.	PRODUCTION (SCD)								
MISC.	ORDER DEPT.								
MISC.	JOINER CONT. YARD								
MISC.	NELSON-PLANNING	2							
	TOTAL ENG'R. DIST.	11	5	5	5	5	5	9	4
	YARD DISTRIBUTION	2-7-72	9-6-72	10-12-72	9-10-73				
YARD	PLAN'G	1	1	1	1				
YARD	A. J. DALBY	3	3	3	3				
YARD	PIECE RATE-11	1	1	1	1				
YARD	TEST DEPARTMENT								
YARD	STRUC. PLANNING								
STRUCTURAL	GROUND ASSEMBLY	4	2	2	2				
STRUCTURAL	35 DEPT.	2	2	2	2				
STRUCTURAL	NO. WAY								
STRUCTURAL	NO. WAY								
STRUCTURAL	NO. WAY								
STRUCTURAL	NO. WAY								
STRUCTURAL	STRUCT. SUPER.	2	2	2	2				
STRUCTURAL	OPTICAL DETAIL-48	2	2	2	2				
STRUCTURAL	WET DOCK								
MACH'Y & OUTFIT.	PIPE SHOP-52		2	2	2				
MACH'Y & OUTFIT.	OUTFIT. #1 PIER								
MACH'Y & OUTFIT.	PIPE DRAFT.-82	2	2	2	2				
MACH'Y & OUTFIT.	BOILER SHOP-58								
MACH'Y & OUTFIT.	OUTSIDE MACH.-60	2	1	1	1				
MACH'Y & OUTFIT.	Q-MAT'L	1	1	1	1				
MACH'Y & OUTFIT.	ELECTRIC SHOP-70	1	1	1	1				
MACH'Y & OUTFIT.	SHEET MET. SHOP-74	3	3	3	3				
MACH'Y & OUTFIT.	COPPER SHOP-51	2	2	2	2				
MACH'Y & OUTFIT.	PAINT SHOP-76	1	1	1	1				
OTHER	WELDING	1	1	1	1				
OTHER	GUARANTEE DEPT.	1	1	1	1				
OTHER	MOLD LOFT-41	1	1	1	1				
OTHER	BRACKET SHOP								
OTHER	ORDER DEPT.	1	1	1	1				
	TOTAL YARD DIST.	30	30	30	30				

4639, 40 - ALT. 2
4639, 40 - ALT. 3
4640 - ALT. 4

M-464 — SQ. FT.

F
1
M-4639-377-1
ALT. 4
M-464

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

(Amount of Pipe) Straight	Bent	Amount of Valves	Amount of Flanges (Pairs)	Amount of Fittings	Remarks
'			2	8	
'	12'	4	2	12	SEE METHODS OF APPLICATION - No. 1A, 1B, 1C.
'	16'	4	10	7	
0'	42'	5	9	18	
'		4	1	1	
		12			
5'		36	17	8	
'		4	2		
0'	8'		4	6	
2'	12'	2	4	6	
3'	9'	4	3	5	
5'	6'	1	4	5	SEE METHODS OF APPLICATION - No. 1A, 1B, 1C.
3'				4	
3'	9'	5	9	16	
0'	14'	3	4	5	
6'	14'	5	11	11	
9'	48'	3	20	18	
3'	4'	4	3	7	
0	12	3	5	4	SEE METHODS OF APPLICATION - No. 2A.
	5	2	4	2	
6	7	3	4	3	
7	4	2	5	4	
2	2		1	1	
5	7	2	6	17	
6	4	2	4	4	
5	6	2	2	5	
3	10	4	12	11	
		2		4	
29'	23'	2	14	8	
21'	34'	3	12	7	
6'	10'	1	6	2	
2'				2	
7'	3'		1	1	SEE METHODS OF APPLICATION - No. 2A.
7'	5'	3	3	4	
7'	3'	7	4	6	
6'		10	2	12	
6'	6'	5	7	11	
1'	4'	3	7	4	
4'	6'	2	3	4	
3'	4'	1	1	5	
6'	18'	2	4	1	
02'	13'	3		4	
6'	9'	8	1	8	
3'		3	-	1	
4'		4		10	
19'		1	1	1	SEE METHODS OF APPLICATION - No. 2A.
3'				1	
46'	14'	1	5	2	
15'	10'	2	6	2	
47'	89'	12	45	22	
8'	3'	1	2	3	
73'	35'	23	20	32	
33'	33'	3	13	3	
90'	24'	7	14	11	
125'	19'	7	16	6	
40'	12'	4	7	15	
33'		4		14	
160'	30'	9	5	17	
12'	3'	1		2	
44'	12'	6	6	6	SEE METHODS OF APPLICATION - No. 1A, 1B, 1C.
82'	20'	2	7	4	
15'	10'	2	2	2	
9'			1	1	
22'		1		6	
45'	18'	2	4	5	
5'		2	2		SEE METHODS OF APPLICATION - No. 2A.
43'	15'	1	5	6	
32'	25'	1	2	1	
55'	15'	3	3	6	
10'	4'	1	1	1	
2'		1	1	1	
6"		1	1		
42'	4'				
10'	4'	4			
75'	8'	1	4	3	SEE METHODS OF APPLICATION - NO. 2A
7'			1	1	
5'				2	
86'	20'	5	7	12	
80'	10'			8	
14'		5	1	9	

Service & Plan No.	Item No.	Pipe Size	Insulation Material	Insulation Spec.	Insulation Thickness	Lagging Material △3	Lagging Spec. △3	Lagging Cement	Total Thk.	Temp. Range	Amount of Pipe Straight	Amount of Pipe Bent	Amount of Valves	Amount of Flanges (Pairs)	Amount of Fittings	Remarks
ESCAPE PIPING	1	10"	FIBROUS GLASS	MIL. SPEC MIL-I-22344	1½"	FIBROUS GLASS CLOTH	MIL. SPEC. MIL-C-20079	ADHESIVE: MIL-A-3316 TYPE II	1½"	400°	5'			2	3	SAFETY RELIEF VALVE ESCAPE PIPING SHALL BE INSULATED FOR PESONNEL PROTECTION ONLY AND SHALL BE INSULATED 4 FT. FROM SAFETY RELIEF VALVE.
M-4622-371-04-1&2	2	8"			1½"				1½"		4'			1	2	
	3	6"			1½"				1½"		8'	5'		3	1	
	4	5"			1"				1"		15'			3	8	
	5	4"			1"				1"		5'			1	1	
	6	3"			1"				1"		10'			2	2	
	7															
	8															
	9															
	10															
	11															
	12															
	13															
	14															
	15															
	16								2½"	900°	60'		4		8	SEE METHODS OF APPLICATION - No. 1A, 1B, 1C & 2A
	17	¾"	THERMO-BESTOS	MIL. SPEC. MIL-I-2781	2½"	FIBROUS GLASS CLOTH	MIL. SPEC MIL-C-20079	ADHESIVE: MIL-A-3316 TYPE II								
STEAM & F.W. DRAIN COLLECTING SYSTEM	18															
M-4639-372-03-1,2&3	19															
	20															
	21															
	22								1½"	212°	113'	28'	3	10	4	
	23	4"	FIBROUS GLASS	MIL. SPEC. MIL-I-22344	1½"				1"		263'	50'	3	20	7	
	24	3"			1"				1"		140'	4'	16	17	40	
	25	2½"			1"				1"		412'	74'	18	42	32	
	26	2"			1"				1"		287'	70'	2		37	
	27	1½"			1"				1"		50'		4		15	
	28	1¼"			1"				1"		139'	4'	14	2	47	
	29	1"			1"				1"		111'	5'	13		54	
	30	¾"			1"				1"		167'		22		63	
	31	½"			1"				1½"	362°	288'	14'	1	16	5	SEE METHODS OF APPLICATION - No. 2A.
STEAM PIPING FOR CARGO & FUEL OIL HEATING & ALLIED DRAIN PIPING IN 2nd DECK PASSAGE WAY - P&S	32	4"	THERMO-BESTOS	MIL. SPEC. MIL-I-2781	1½"	FIBROUS GLASS CLOTH	MIL. SPEC MIL-C-20079	ADHESIVE: MIL-A-3316 TYPE II	1½"		404'	9'	1	24	5	
M-4639-374-1,2&3	33	3"			1½"				1½"		63'	2'		3	3	
	34	2½"			1½"				1½"		421'	12'	1	17	7	
	35	2"			1½"											
	36								1½"		28'		16	16	24	STEAM ASS'Y
	37	2"			1½"				1		84'		42	28	98	
	38	1½"			1"				1"	212°	406'	11'		23	5	
	39	2½"	FIBROUS GLASS	MIL. SPEC. MIL-I-22344	1"				1"		799'	14'		42	4	
	40	2"			1"				1"		10'			1	2	
	41	1½"			1"				1"		72'		18	36	90	DRAIN ASS'Y
	42	1"			1"											
	43															
FEED CONTROL PIPING AT DISTILLERS (ON UNITS)	44		FIBROUS GLASS	MIL. SPEC. MIL-I-22344		FIBROUS GLASS CLOTH	MIL. SPEC. MIL-C-20079	ADHESIVE: MIL-A-3316 TYPE II	1"	170°	12'				4	
	45	4"			1"											
	46															
	47								1"	56°/125°	8"		1	2	2	POT. WATER
STM. & P. WTR. SYS. - FWD. MACHY SPACE M-4639-374-5	48	3"	FIBROUS GLASS	FED. SPEC. HH-I-558	1"	FIBROUS GLASS CLOTH	MIL. SPEC. MIL-C-20079	B. FOSTER INSULFAS 31-30	1"		52'	4'	1	6	7	
	49	2½"			1"						25'			3	2	
	50	2"														SEE METHODS OF APPLICATION - No. 2A.
	51		THERMO-BESTOS	MIL. SPEC. MIL-I-2781		FIBROUS GLASS CLOTH	MIL. SPEC. MIL-C-20079	ADHESIVE: MIL-A3316 TYPE II	1½"	362°	75'	10'	4	12	10	142# STEAM & RET.
	52	2½"			1½"				1½"		5'			3	5	
	53	2"			1½"				1"		81'	15'		6		
	54	1½"			1"				1"		23'		2	4	5	
	5	1"			1"											
	5								1½"	362°	110'	10'	2	2	10	PIPING INSIDE OF HSE.
142# STM. TO WHISTLE - FWD. M-4639-376-05-2&3	5	2"	THERMO-BESTOS	MIL. SPEC. MIL-I-2781	1½"	FIBROUS GLASS CLOTH	MIL. SPEC. MIL-C-20079	ADHESIVE: MIL-A-3316 TYPE II	1"		120'	10'	3	2	10	
	5E	1½"			1"				1"		8'		3		4	
	59	¾"			1"											SEE METHODS OF APPLICATION - No. 2A
	60								3"	362°	54'	2'			3	PIPING EXPOSED TO WEATHER
	61	2"	THERMO-BESTOS	MIL. SPEC. MIL-I-2781	3"	FIBROUS GLASS CLOTH	MIL. SPEC. MIL-C-20079		2"		54'	2'			3	
	62	1½"			2"											
	63								1"		10'			1		SEE GENERAL NOTE NO. 15
GALLEY FIRE LINES M-4639-182-12-2	64	3"	FIBROUS GLASS	FED. SPEC HH-I-558	1"	FIBROUS GLASS CLOTH	MIL. SPEC. MIL-C-20079	B. FOSTER INSULFAS 31-30	1"		20'			1	7	
	65	2½"			1"											
	66															
	67															
	68								½"	–		12'				NO FINISH OR LAGGING IS REQUIRED.
△4 VALVE HANDWHEELS IN 2ND DECK PASSAGE FORWARD FOR PERSONAL PROTECTION M-4639-374-5	69	7/8" I.D.	ANTI-SWEAT FOAM PLASTIC	SPEC. MIL P15280D TYPE 2	½"											
	70															
	71															
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...MARKS

...LICATION - NOTE 1-D

...-FITTINGS / S-FLANGES.

Service & Plan No.	Item No.	Pipe Size	Insulation: Material	Insulation: Spec.	Insulation: Thickness	Lagging: Material △3	Lagging: △3 Spec.	Lagging: Cement	Total Thk.	Temp. Range	Amount of Pipe: Straight	Amount of Pipe: Bent	Amount of Valves	Amount of Flanges (Pairs)	Amount of Fittings	Remarks
△2 Smoke Stack M-4639-361-2	209		Calcium	Fed. Spec.	2"	Hex. Mesh		Fed. Spec.	2¼"	330°	480"					See Methods of Application - No. 5A, 5B, 5C
Uptakes M-4639-361-1	210		Silicate	HH-1-523	2"	Galv. Wire		SS-C-160	2¼"	350°	1100"			Pad req'd 155 ft²		
Diesel Generator Exhaust Piping	211	8"			4"	Fibrous Glass	Mil. Spec.	Adhesive Mil-	4"	800°	43'	5'		9	5	Muffler Pad: 6 sq. ft.
M-4639-374-4	212					Cloth	MIL-C-20079	A3316 Type II								
M-4639-361-2	213															
	214															
Gland Seal & Exhaust Piping M-4639-371-1	215	6"	Calcium	Fed. Spec.	3½"	Fibrous Glass	Mil. Spec.	Adhesive Mil		896/805	54	10		8	10	See Methods of Application - No. 2A
	216	4"	Silicate	HH-1-523	3½"	Cloth	MIL-C-20079	A3316 Type II			25	10		5	6	
	217	2½"			3"						8			2	4	
	218	2"			3"						15	5		6		
	219	1½"			3"						15	4		2		
	220	1"			2½"						25	3		4	1	
	221	½"			2½"						10			2	4	See Methods of Application - No. 2A
	222															
	223	6"	Calcium	Fed. Spec.	2"	Fibrous Glass	Mil. Spec.	Adhesive Mil		509/285	25'	6'	1	5	2	
	224	5"	Silicate	HH-1-523	2"	Cloth	MIL-C-20019	A3316 Type II			3'	2'		1	1	
	225	3"			2"						75'	17'	2	20	7	
	226	2"			2"						68'	17'	2	11	2	
	227	1½"			1½"						18'	4'	1	2	6	
	228	1¼"			1½"						158'	14'	1	10	7	
	229	1"			1½"						17'	3'				
	230	¾"			1½"						10'			2		
	231	½"			1½"						43'			3	14	
△4 Ventilation & A.C.	232		Fibrous Glass	See General Notes 11-A, 11-B	See General Note 11-C	See General Note 11-D					Round Duct		Rect. Ducts			See Methods of Application - No. 4A, 4B, 4C and Sketch "A". Note: All preheaters, reheaters and cooling coils have been included as duct work.
	233										½" Thick	1" Thick	½" Thick	1" Thick		
M-4639-191-21 Fan Room-Aft.	234															
M-4639-191-22 Fan Room-Fwd.	235															
M-4639-191-23 2nd Deck Aft.	236															
M-4639-191-24 Upper Dk. Aft.	237															
M-4639-191-25 'A' Deck	238															
M-4639-191-26 'B' Deck	239															
M-4639-191-27 Focle Deck & Quarters	240															
M-4639-191-28 Nav. Bridge & 'A' Deck Qtrs.	241															
	242									Totals	931 sq. ft.	90 sq. ft.	3536 sq. ft.	1365 sq. ft.		
	243															
	244															
Water Piping in Machinery Space	245		Anti-Sweat	Spec: Mil-												See Methods of Application No. 6A & B. No finish or lagging is required.
M-4639-372-02-01	246	4"	Foam Plastic	P15280D Type II	½"					56/125°	23'	4'	1	2	10	
M-4639-372-02-05	247	2½"			½"						483'	32'	20	54	77	
M-4639-372-02-06	248	2"			½"						149'	13'	2	17	21	
M-4639-372-02-07	249	1½"			½"						277'	10'	6	19	25	Pot. Wtr. & W. Wtr. - Aft. Machy. Space
M-4639-372-02-08	250	1¼"			½"						25'		4	10	17	
Potable Water Piping in Machinery Spaces	251	1"			½"						20'		2	2	10	
	252	¾"			½"						18'	2'	1		4	
	253	½"			½"						347'	4'	5		40	
M-4639-183-11-1 Aft.	254	1¼"	Fibrous Glass	Fed. Spec. HH-1-558	1"	Fibrous Glass Cloth	Mil. Spec. MIL-C-20079	Adhesive: Mil-A-3316 Type II		140°	100'	10'	13	10	25	
	255															
	256															
Air Conditioning & Ships Stores Refrige. Piping	257	3⅛" O.D.	Pitt Corning Foamglass		2¼"	Fibrous Glass	Mil. Spec.	B. Foster	2¼"		70'	6'			10	See Methods of Application - No. 3A
	258	2⅝" O.D.			2¼"	Cloth	MIL-C-20079	Insulfas #31-30	2¼"		110'				17	
M-4639-402-2 & 3	259	2⅛" O.D.			2¼"				2¼"		32'	4'			19	
Insulation to be applied to all lines between refrigerated space bhds. & heat exchanger & on suction lines to compressor. All lines between A/C Freon comp. unit & cooling coils are to be insulated.	260	1⅝" O.D.			2¼"				2¼"		95'	12'	1		18	
	261	1⅜" O.D.			2½"				2½"		50'	5'			15	
	262	1⅛" O.D.			2¼"				2¼"		245'	15'	15		30	
	263	⅞" O.D.			2¼"				2¼"		15'	2'	1		5	
	264	¾" STL.			2¼"				2¼"		14'	4'				
Cooling line to crankcase of ships service reefer compressor to be insulated. Drain lines in refrigerated boxes to be insulated.	265	⅝" O.D.			2¼"				2¼"		86'	-	*12		23	
	266	½" O.D.			2¼"				2¼"		120'		14		32	
	267	⅜" O.D.			2¼"				2¼"		14'		12		10	
	268															
	269															
	270															
Steam Heating Sys.	271	2½"	Fibrous	Fed. Spec.	1"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	1"	200/280	129'-0"	10'-0"	1	7	10	
M-4639-376-05-2 Fwd. Quarters Focle. Deck & Above	272	2"	Glass	HH-1-558	1"	Cloth	MIL-C-20079	A-3316 Type II	1"		200'-0"	18'-0"	2	14	11	See Methods of Application - No. 7A & B and Sketch "B".
	273	1½"			1"				1"		270'-0"	20'-0"	7	2	30	
M-4639-376-05-3 Fwd. Quarters Upper Deck & Below	274	1¼"			1"				1"		230'-0"	10'-0"	10		154	
	275	1"			1"				1"		150'-0"	10'-0"	10		57	
M-4639-376-05-4 Aft. Quarters Upper Deck & Above	276	¾"			1"				1"		360'-0"		13		72	
	277	½"			1"				1"		1785'-0"		51		345	
M-4639-376-05-5 Aft. Quarters 2nd Deck & Below	278	⅜"			1"				1"		50'-0"		1		8	
	279															
	280															
Fuel Oil Piping	281	3"	Fibrous	Spec: Mil-	1"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	1"	250°	100'	25'	4	6	18	See Methods of Application - No. 2A.
M-4639-181-07-1 From Fuel Oil Heaters to Burners	282	2"	Glass	I-22344	1"	Cloth	MIL-C-20079	A-3316 Type II	1"		125'	8'	15	14	32	
	283	1½"			1"				1"		20'		9	2	2	
	284															
	285	1"			1"				1"				1	2	10	
	286	¾"			1"				1"		12'		12		4	
	287	½"			1"				1"		4'		12		4	
Potable Water Systems	288		Fibrous	Fed. Spec.		Fibrous Glass	Mil. Spec.	B. Foster		56/140°						See Methods of Application - No. 2A.
M-4639-183-13-2 Fwd. Quarters Focle. Deck & Above	289	2"	Glass	HH-1-558	1"	Cloth	MIL-C-20079	Insulfas #31-30	1"		225'-0"	25'-0"	6	6	23	
M-4639-183-13-3 Fwd. Quarters Upper Deck & Below & L/M	290	1½"			1"				1"		168'-0"	20'-0"	1		19	
	291	1¼"			1"				1"		1150'-0"	60'-0"	4		58	
M-4639-183-13-4 P.W. & Wash Wtr. Sys. Aft. Qtrs. - Upper Dk. & Abv.	292	1"			1"				1"		1130'-0"	28'-0"	9		150	
△4 M-4639-183-13-5 P.W. & Wash Wtr. Sys. - Aft. Qtrs. - 2nd Dk. & Below & L/M	293	¾"			1"				1"		265'-0"	10'-0"	1		31	
	294	½"			1"				1"		906'-0"	46'-0"	7		149	
	295	⅜"			1"				1"		727'-0"	17'-0"			107	
M-4639-374-1, 2 & 3 Arrgt. of Piping in 2nd Dk. Passageways	296															
	297	2½"			1"				1"	56/140°	409'-0"	15'-0"		20	3	
	298															
Soil & Clear Waste Drains △1 M-4639-184-03-1 & 2	299	4"	Fibrous	Fed. Spec.	½"						1034'	64'	2	22	123	On concealed piping only bends are to be lagged and all exposed piping shall be lagged in accordance with sketch "C". △2
Soil & Clear Waste Drains Fwd. Qtrs. △1	300	3"	Glass △2	△2 HH-1-558	½"						275'	45'	9	26	20	
M-4639-184-03-3 & 4 △1	301	2"			½"						342'	23'			100	
Soil & Clear Waste Drains Aft. Qtrs. △1	302	1½"			½"						88'	6'			15	
△1	303	1¼"			½"						60'	4'			8	
△1	304	2½"			½"						54'	4'	1	1	1	
△1	305	⅜"			½"						42'	4'			18	
	306															
	307															
△4 Water Service Lines in Shaft Alley	308	5"	Anti-Sweat	Spec. Mil-	½"				½"	56°/125°	60'	—				See Methods of Application Notes 6A & 6B. No finish or lagging is required
M-4639-372-05-06-07-08	309	4"	Foam Plastic	P15280D Type 2	½"				½"		33'	—				
	310	1½"			½"				½"		24'	—				
	311															
	312															

Service & Plan No.	Item No.	Pipe Size	Insulation: Material	Insulation: Spec.	Insulation: Thickness	Lagging: Material △3	Lagging: △3 Spec.	Lagging: Cement	Total Thk.	Temp. Range	Amount of Pipe: Straight	Amount of Pipe: Bent	Amount of Valves	Amount of Flanges (Pairs)	Amount of Fittings	Remarks
Main Steam Piping	105	10"			5"				5"	960/800	40'			2	8	
M-4639-371-09-1 Superheated Steam	106	8"	Calcium	Fed. Spec.	4½"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	4½"		90'	12'	4	2	12	See ...thods of Application - No. 1A, 1B, 1C.
	107	6"	Silicate	HH-1-523	4½"	Cloth	MIL-C-20079	A-3316 Type II	4½"		48'	16'	4	10	7	
Saturated Steam from Drums to Superheaters & Steam Drum Vents & Allied Drains	108	4"			4"				4"		200'	42'	5	9	18	
	109	1½"			3½"				3½"		3'		4	1	1	
	110	1"			3"				3"				12			
	111	¾"			3"				3"		23'		36	17	8	
	112	½"			2½"				2½"		7'		4	2		
	113	5"			2½"				2½"	685/538	70'	8'		4	6	
	114	4"			2½"				2½"		32'	12'	2	4	6	
Auxiliary Steam Piping	115	4"	Calcium	Fed. Spec.	3"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	3"	722°	25'	9'	4	3	5	
M-4639-371-09-9/10 Boiler Press. - Desuperheated Steam & Allied Drains	116	2½"	Silicate	HH-1-523	2½"	Cloth	MIL-C-20079	A-3316 Type II	2½"		33'	6'	1	4	5	See ...thods of Application - No. 1A, 1B, 1C.
	117	5"			2½"				2½"	518/538	10'				4	
	118	4"			2½"				2½"		44'	9'	5	9	16	
	119	2½"			2"				2"		40'	14'	3	4	5	
	120	2"			2"				2"		106'	14'	5	11	11	
	121	1½"			2"				2"		99'	48'	3	20	18	
	122	1"			2"				2"		34'	4'	4	3	7	
	123															
	124															
	125															
	126															
	127															
250° & Below - Desuperheated Steam & Allied Drains	128	6"	Thermo-	Mil. Spec.	2"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	2	450°	40	12	3	5	4	
	129	4"	Bestos	MIL-I-2781	1½"	Cloth	MIL-C-20079	A-3316 Type II	1½"		27	5	2	4	2	See
	130	3"			1½"				1½"		46	7	3	4	3	
	131	2½"			1½"				1½"		17	4	2	5	4	
	132	2"			1½"				1½"		12	2		1	1	
	133	1½"			1½"				1½"		35	7	2	6	17	
	134	1¼"			1½"				1½"		26	4	2	4	4	
	135	1"			1½"				1½"		55	6	2	2	5	
	136	¾"			1½"				1½"		58	10	4	12	11	
	137	½"			1½"				1½"		5		2		4	
	138															
	139	5"	Thermo	Mil. Spec.	1½"	Fibrous Glass	Mil. Spec.	Adhesive: Mil	1½"	405°	129'	23'	2	14	8	
	140	4"	Bestos	MIL-I-2781	1½"	Cloth	MIL-C-20079	A-3316 Type II	1½"		121'	34'	3	12	7	
	141	3"			1½"				1½"		16'	10'	1	6	2	
Contaminated Steam 142° & Below & Allied Drains	142	2½"			1½"				1½"		2'				2	
	143	2"			1½"				1½"		17'	3'		1	1	See
	144	1½"			1½"				1½"		47'	5'	3	3	4	
	145	1¼"			1½"				1½"		37'	3'	7	4	6	
	146	1"			1½"				1½"		26'		10	2	12	
	147	¾"			1½"				1½"		66'	6'	5	7	11	
	148	½"			1½"				1½"		81'	4'	3	7	4	
	149															
	150	3"			1"				1"	370/281	24'	6'	2	3	4	
	151	2"			1"				1"		23'	4'	1	1	5	
	152	1½"			1"				1"		146'	18'	2	4	1	
	153	1¼"			1"				1"		102'	13'	3		4	
	154	1"			1"				1"		46'	9'	8	1	8	
	155	¾"			1"				1"		3'		3		1	
	156	⅜"			1"				1"		14'		4		10	
Steam for make up to aux. exhaust sys. & 29" reducing station & allied drains	157	12"	Thermo-	Mil. Spec.	2"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	2"	370°	19'		1	1	1	See
M-4639-371-09-9/10	158	6"	Bestos	MIL-I-2781	2"	Cloth	MIL-C-20079	A-3316 Type II	2"	450°	3'				1	
	159															
	160															
	161															
	162															
Air Ejector, Condensate & Feed Piping & Allied Drains	163	10"	Fibrous	Mil. Spec.	2"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	2"	292°	46'	14'	1	5	2	
M-4639-372-11-1, 2 & 3	164	8"	Glass	MIL-I-22344	1½"	Cloth	MIL-C-20079	A-3316 Type II	1½"		15'	10'	2	6	2	
	165	6"			1½"				1½"		247'	89'	12	45	22	
	166	5"			1				1		8'	3'	1	2	3	
	167	4"			1½"				1½"		173'	35'	23	20	32	
	168	3"			1"				1"		133'	33'	3	13	3	
	169	2½"			1"				1"		90'	24'	7	14	11	
	170	2"			1"				1"		125'	19'	7	16	6	
	171	1½"			1"				1"		40'	12'	4	7	15	
	172	1¼"			1"				1"		33'		4		14	
	173	1"			1"				1"		160'	30'	9	5	17	
	174	¾"			1"				1"		12'	3'	1		2	
	175															
	176															
	177															
	178															
Boiler Blow Piping & Allied Drains & Boiler Water to Test Station	179	1½"	Thermo-	Mil. Spec.	1½"	Fibrous Glass	Mil. Spec.	Adhesive: Mil-	1½"	540°	44'	12'	6	6	6	See
M-4639-372-11-1, 2 & 3	180	¾"	Bestos	MIL-I-2781	1½"	Cloth	MIL-C-20079	A-3316 Type II	1½"		82'	20'	2	7	4	
	181	½"			1½"				1½"		15'	10'	2	2	2	
	182															
	183	16"	Thermo	Mil. Spec.	1½"	Fibrous Glass	Mil. Spec.	Adhesive: Mil	1½"	244/184	9'			1	1	
	184	10"	Bestos	MIL-I-2781	1½"	Cloth	MIL-C-20079	A-3316 Type II	1½"		22'		1		6	
	185	8"			1½"				1½"		45'	18'	2	4	5	
	186	6"			1"				1"		5'		2	2		
Bleeder Steam Piping	187															See
	188	8"			2"				2	448°	43'	15'	1	5	6	
M-4639-371-04-1 & 2	189	6"			2"				2		32'	25'	1	2	1	
	190	4"			1½"				1½"		55'	15'	3	3	6	
	191	3"			1½"				1½"		10'	4'	1	1	1	
	192	2½"			1½"				1½"		2'		1	1	1	
	193	2"			1½"				1½"		6'		1	1		
	194															
	195	1"			2"				2"	697°	42'	4'				
	196	½"			2"				2"		10'	4'	4			
	197															
Auxiliary Exhaust	198	12"	Fibrous	Mil. Spec.	1½"	Fibrous Glass	Mil. Spec.	Adhesive: Mil	1½"	292°	75'	8'	1	4	3	See M...ods of Application - No. 7A
M-4639-371-04-1 & 2	199	10"	Glass	MIL-I-22344	1½"	Cloth	MIL-C-20079	A-3316 Type II	1½"		7'			1	1	
	200	8"			1½"				1½"		5'				2	
	201	6"			1"				1"		86'	20'	5	7	12	
	202	5"			1"				1"		80'	10'			8	
	203	4"			1"				1"		14'		5	1	9	
	204															
	205															
	206															
	207															
	208															

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H 4639-4640

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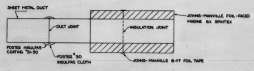
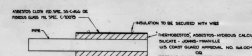
NAME OF EQUIPMENT	ITEM NO.	INSULATION MATERIAL	INSULATION SPEC.	INSULATION THICKNESS	LAGGING MATERIAL	LAGGING SPEC.	LAGGING ADHESIVE	TOTAL THK.	TEMP. RANGE °F	QTY REQ.	APPROX. SQ. FT. TOTAL AREA	REMARKS
H.P. TURBINE	3-3	CALCIUM SILICATE	FED SPEC. HH-I-558	4"	FIBROUS GLASS CLOTH	MIL-C-20079 TYPE II CLASS 2	ARMSTRONG ARMAFLEX 520 TYPE	5"	900	1	776	SEE NOTES & APPLICATION - NOTE 10
L.P. TURBINE	3-4			4"				5"	900	1	1,800	
BOILER DRUM (STEAM)	3-5			2"				4"	535	5	1,760	
BOILER DRUM (WATER)	3-6			2"				4"	106	5	39	
THROTTLE VALVE	3-7			4"				5"	900	1	18	
CROSS CONN. FOR H.P.& L.P. TURBS	3-8			PAD				PAD	450		33	
1200 K.W. SERVL. TURBINES	3-9			PAD				5"	900	5	20	
MAIN FEED PUMPS-TURBINES	3-10			3"				3"	540	5	40	
FUEL OIL HEATERS	3-11			2.5"				2"	340	5	41	
LUBE OIL HEATER (PUMPERS)	3-12			1"				1.5"	280	1	4	
BULGE OIL & WATER SEPARATORS	3-13			1"				1.5"	280	1	9.0	
BOILER AIR HEATERS	3-14			1"				1.5"	570	5	198	
CONDUCTIVE FEED WATER HEATERS	3-15			1"				1.5"	570	1	44.1	
DE-AERATING FEED WATER HEATER (SPRAY TYPE) & STORAGE TANK	3-16			1"				1.5"	140	1	108	
12" STAGE 5 H. HEATER	3-17			1"				1.5"	184	1	9.0	
MAIN AIR EJECTOR- TWIN 2-STAGE	3-18			1"				1.5"	330	1	28	1/2" THICK ARMAFLEX
AUX. AIR EJECTOR/ CONDENSERS	3-19			1"				1.5"	100	1	32	SEE STEAM_SHADES_4 FITTINGS-INSURANCE
STEAM SEPARATOR/DRYER	3-20			4.5"				5"	450	1	10	
DISTILLING PLANT AIR EJECTORS	3-21			2.5"				3"	340	5	24	
DISTILLING PLANT - S.W. HEATERS	3-22			1"				1.5"	148	5	24	
DISTILLING PLANT- SHELL	3-23			1"				1.5"	118	5	276	
POTABLE WATER HEATERS	3-24			1"				1.5"	140	5	31	
BOILER AIR HEATER DRAIN TANKS	3-25			2"				2.5"	215	5	24	
CONTAMINATED STEAM EVAPORATOR	3-26			2.5"				3"	340	1	178	
CONTAMINATED DRAIN COOLERS	3-27			2.5"				3"	340	5	24	
CONTAM. DRAIN INSPECTION TANK	3-28			2"				2.5"	215	1	64	
CONDENSATE FILTER	3-29			2"				2.5"	215	1	48	
EXT. REQUIREMENTS FOR ENGINE-ROOM EL. + FITTINGS	3-30			PAD				PAD	300	1	40	
ATMOSPHERIC DRAIN TANK	3-31			1"				2.5"	280	1	105	



DUCT INSULATION - SKETCH "A"

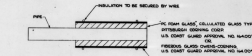
MATERIAL	U.S. COAST GUARD APPROVAL NO.	TYPE
INSULATION CONFIG 3-30	164.009/80/0	EQUIVALENT
TWO INSULATION CLOTH	164.009/35/0	
FOIL FACED OUTER FINE CO.*	U.S. COAST GUARD	CERTAIN FACED STOCKMAN
FOIL TAPE	164.015	JOHNSON ENGINEERED

* KIMBERWESTERN LABORATORIES INC. REPORTS ARE AVAILABLE INDICATING THAT MATERIAL COMPLIES WITH THE TEST REQUIREMENTS OF MIL-A-3316.



HOT WATER & LOW PRESSURE STEAM INSULATION IN CHAPTERS

SKETCH "B"

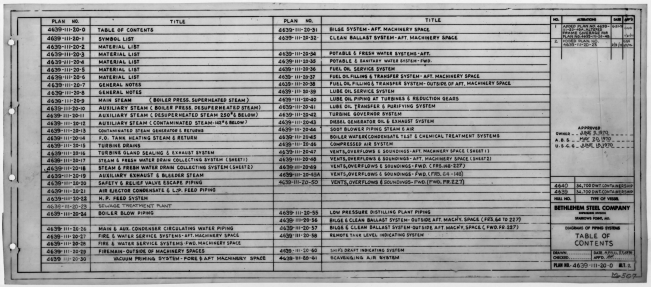


COLD WATER INSULATION IN CHAPTERS

SKETCH "C"

F 4
111-46-34-377-1
111-46-4
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4660
8X

BETHLEHEM STEEL CORP. JULY 1974
8X
H 4639-4640
111-20-0 ALT 2
111-507
F



PLAN NO.	TITLE
4639-111-20-0	TABLE OF CONTENTS
4639-111-20-1	SYMBOL LIST
4639-111-20-2	MATERIAL LIST
4639-111-20-3	MATERIAL LIST
4639-111-20-4	MATERIAL LIST
4639-111-20-5	MATERIAL LIST
4639-111-20-6	MATERIAL LIST
4639-111-20-7	GENERAL NOTES
4639-111-20-8	GENERAL NOTES
4639-111-20-9	MAIN STEAM (BOILER PRESS. SUPERHEATED STEAM)
4639-111-20-10	AUXILIARY STEAM (BOILER PRESS. DESUPERHEATED STEAM)
4639-111-20-11	AUXILIARY STEAM (DESUPERHEATED STEAM 350°F BELOW)
4639-111-20-12	AUXILIARY STEAM (CONTAMINATED STEAM 140°F BELOW)
4639-111-20-13	CONTAMINATED STEAM SEPARATOR & RETURNS
4639-111-20-14	F.O. TANK HEATING STEAM & RETURN
4639-111-20-15	TURBINE DRAINS
4639-111-20-16	TURBINE GLAND SEALING & EXHAUST SYSTEM
4639-111-20-17	STEAM & FRESH WATER DRAIN COLLECTING SYSTEM (SHEET1)
4639-111-20-18	STEAM & FRESH WATER DRAIN COLLECTING SYSTEM (SHEET2)
4639-111-20-19	AUXILIARY EXHAUST & BLEEDER STEAM
4639-111-20-20	SAFETY & RELIEF VALVES ESCAPE PIPING
4639-111-20-21	AIR EJECTOR CONDENSATE & L.P. FEED PIPING
4639-111-20-22	H.P. FEED SYSTEM
4639-111-20-23	SOUNDS "MOTHBALL" PLANT
4639-111-20-24	BOILER BLOW PIPING
4639-111-20-25	MAIN & AUX. CONDENSER CIRCULATING WATER PIPING
4639-111-20-27	FIRE & WATER SERVICE SYSTEMS-AFT. MACHINERY SPACE
4639-111-20-28	FIRE & WATER SERVICE SYSTEMS-FWD. MACHINERY SPACE
4639-111-20-29	FIREMAIN- OUTSIDE OF MACHINERY SPACES
4639-111-20-30	VACUUM PRIMING SYSTEM - FORE & AFT MACHINERY SPACE

PLAN NO.	TITLE
4639-111-20-31	BILGE SYSTEM - AFT. MACHINERY SPACE
4639-111-20-32	CLEAN BALLAST SYSTEM - AFT. MACHINERY SPACE
4639-111-20-34	POTABLE & FRESH WATER SYSTEMS - AFT.
4639-111-20-35	POTABLE & SANITARY WATER SYSTEM - FWD.
4639-111-20-36	FUEL OIL SERVICE SYSTEM
4639-111-20-37	FUEL OIL FILLING & TRANSFER SYSTEM - AFT. MACHINERY SPACE
4639-111-20-38	FUEL OIL FILLING & TRANSFER SYSTEM - OUTSIDE OF AFT. MACHINERY SPACE
4639-111-20-39	LUBE OIL SERVICE SYSTEM
4639-111-20-40	LUBE OIL PIPING AT TURBINES & REDUCTION GEARS
4639-111-20-41	LUBE OIL TRANSFER & PURIFYING SYSTEM
4639-111-20-42	TURNING GOVERNOR SYSTEM
4639-111-20-43	DIESEL GENERATOR OIL & EXHAUST SYSTEM
4639-111-20-45	SOOT BLOWER PIPING STEAM & AIR
4639-111-20-46	BOILER WATER/CONDENSATE TEST & CHEMICAL TREATMENT SYSTEMS
4639-111-20-47	COMPRESSED AIR SYSTEM
4639-111-20-47	VENTS, OVERFLOWS & SOUNDINGS - AFT. MACHINERY SPACE (SHEET1)
4639-111-20-48	VENTS, OVERFLOWS & SOUNDINGS - AFT. MACHINERY SPACE (SHEET2)
4639-111-20-49	VENTS & OVERFLOWS & SOUNDINGS - FWD. (FRS. 48-227)
4639-111-20-50	VENTS, OVERFLOWS & SOUNDINGS - FWD. (FRS. 64-148)
4639-111-20-50	VENTS, OVERFLOWS & SOUNDINGS - FWD. (FWD. FR. 227)
4639-111-20-53	LOW PRESSURE DISTILLING PLANT PIPING
4639-111-20-55	BILGE & CLEAN BALLAST SYSTEM - OUTSIDE AFT. MACH'Y. SPACE (FRS. 66 TO 227)
4639-111-20-57	BILGE & CLEAN BALLAST SYSTEM OUTSIDE AFT. MACH'Y. SPACE (FWD. FR. 227)
4639-111-20-58	REMOTE TANK LEVEL INDICATING SYSTEM
4639-111-20-60	SANITARY INDUSTRIAL SYSTEM
4639-111-20-61	SEAWATER/H.D. & R. SYSTEM

NO.	ALTERATIONS	MADE	APP'D
1	ADDED PLAN NO. 4639-111-20-61 TO TABLE OF CONTENTS	10-7-75	[illegible]
2	ADDED PLAN NO. 4639-111-20-25	1-8-76	G.A.T.
3	ADDED PLAN NO. 4639-111-20-0	3-9-76	G.A.T.

APPROVED
ENGR. - JUNE 2, 1970
A.B.S. - FEB. 25, 1970
U.S.C.G. - JUNE 25, 1970

4640	ALTERNATE CONSTRUCTION
4639	MILITARY SPECIFICATION

HULL NO. — TYPE OF VESSEL

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
QUINCY, MASS.

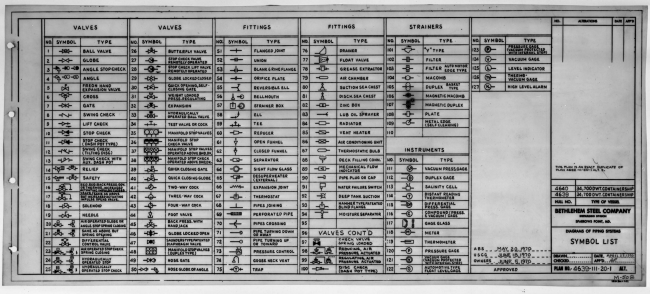
CONTENTS OF PIPING SYSTEMS

TABLE OF CONTENTS

DRAWN	MAR. 1970
CHECKED	APPR. DEPT.

PLAN NO. 4639-111-20-0 SH. 1

E-509



VALVES

NO.	SYMBOL	TYPE
1		BALL VALVE
2		GLOBE
3		ANGLE STOP-CHECK
4		ANGLE
5		FEEDS HAND CONTROL VALVE
6		CROSS
7		GATE
8		SWING CHECK
9		LIFT CHECK
10		STOP CHECK
11		STOP CHECK THROTTLING TYPE (SPECIAL TRIM)
12		SWING CHECK, WITH NO. 3068 FIT
13		SWING CHECK, WITH NO. 3068 FIT
14		RELIEF
15		SAFETY
16		3/4 BLOCK DISTRIBUTOR WITH 3/4 BRASS GLOBE VALVE ON EACH OUTLET
17		3/4 BLOCK DISTRIBUTOR WITH 3/4 BRASS GLOBE VALVE ON EACH OUTLET
18		SOLENOID
19		HEERES
20		"PATENTED" STOP BLOCK W/ BRASS STOP-WAY PLUGS
21		"PATENTED" STOP BLOCK W/ BRASS STOP-WAY PLUGS
22		BUTTERWORTH STOP-BLOCK W/ BRASS GLOBES
23		BUTTERWORTH STOP-BLOCK W/ BRASS GLOBES
24		
25		

VALVES

NO.	SYMBOL	TYPE
26		BUTTERFLY VALVE
27		STOP-CHECK ANGLE
28		STOP-CHECK, LIFT TYPE, PRESSURE SEALED
29		GLOBE, LEVER OPERATED
30		QUICK OPENING, SELF CLOSING VALVE
31		RELIEF, VACUUM BREAKING AND REGULATING
32		EXPANSION
33		DIAPHRAGM VALVE
34		"DEF" VALVE IN DECK
35		MANIFOLD STOP VALVES
36		MANIFOLD STOP VALVES WITH REMOTE HAND CONTROL
37		MANIFOLD STOP VALVES WITH REMOTE HAND CONTROL
38		MANIFOLD STOP VALVES WITH REMOTE HAND CONTROL
39		GEAR CLOSING GATE
40		DECK CLOSING GLOBE
41		TWO-WAY COCK
42		THREE-WAY COCK
43		FOUR-WAY COCK
44		FOOT VALVE
45		BUCK HEAD, WITH HAND JACK
46		GLOBE LOCKED OPEN
47		HANGER (HYDROPHORE) WITH SPRING CLOSING
48		HANGER (HYDROPHORE) WITH SPRING CLOSING
49		HOSE GATE
50		HOSE GLOBE OR ANGLE

FITTINGS

NO.	SYMBOL	TYPE
51		FLANGED JOINT
52		UNION
53		BLANK-END FLANGE
54		ORIFICE PLATE
55		BEVELED-ELL ELL
56		BELLMOUTH
57		STRAINER BOX
58		ELL
59		TEE
60		REDUCER
61		OPEN FUNNEL
62		CLOSED FUNNEL
63		SEPARATOR
64		SIGHT FLOW GLASS
65		TELESCOPE EXPANSION JOINT
66		EXPANSION JOINT
67		THERMOSTAT
68		PIPES JOINING
69		PERFORATED PIPE
70		PIPES CROSSING
71		PIPE CLOSING DOWN ON
72		PIPE TURNING UP OR DOWN
73		PRESSURE CONTROL
74		GOOSE NECK VENT
75		TRAP

FITTINGS

NO.	SYMBOL	TYPE
76		DRAINER
77		FLOAT VALVE
78		GREASE EXTRACTOR
79		AIR CHAMBER
80		SUCTION SEA CHEST
81		PUSH SEA CHEST
82		ZINC BOX
83		LUB OIL SPRAYER
84		THERMOSTATIC BULB
85		DECK FILLING CONN.
86		AIR CONDITIONING UNIT
87		
88		
89		
90		
91		
92		
93		
94		
95		

VALVES CONT'D

NO.	SYMBOL	TYPE
96		CHECK VALVE WITH SPRING
97		REDUCING, R.V. PRESSURE, ACTUATED BY PRESSURE OF WATER
98		REDUCING, R.V. PRESSURE, ACTUATED BY PRESSURE OF WATER
99		DUMP, CARGO (GATE TYPE)
100		DUMP, CARGO (GATE TYPE)

STRAINERS

NO.	SYMBOL	TYPE
101		"Y" TYPE
102		FILTER
103		FILTER WITH HAND HOLE TYPE
104		MACHINE
105		DUPLEX
106		MAGNETIC MACHINE
107		MAGNETIC DUPLEX
108		PLATE
109		METAL LOOP (CELLULOSIDE)
110		

INSTRUMENTS

NO.	SYMBOL	TYPE
111		VACUUM PRESSURE
112		DUPLEX GAGE
113		SALINITY CELL
114		RECEIVE SENDER THERMOMETER
115		RECEIVE SENDER PRESSURE
116		COMPOUND (VERSA & AIR) DUPLEX
117		GAGE GLASS
118		METER
119		THERMOMETER
120		PRESSURE GAGE
121		SPEED INDICATOR
122		AUTOMATIC TAPE (SOUNDING)

NO.	SYMBOL	TYPE
123		PNEUMATIC REMOTE CONTROL VALVE
124		VACUUM GAGE
125		LEVEL INDICATOR
126		THERMO-REGULATOR
127		DUPLEX
128		HIGH LEVEL ALARM

NO.	ALTERATIONS	DATE	APP'D

THE TRUE OR ENTIRE EXCLUSIVE OF THE PROPERTY OF

4640	BL.760W1CENTaxleSHIP
4640	BL.760W1CENTaxleSHIP
MDL NO.	TYPE OF VESSEL

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SUBURBAN PLANT, N.Y.

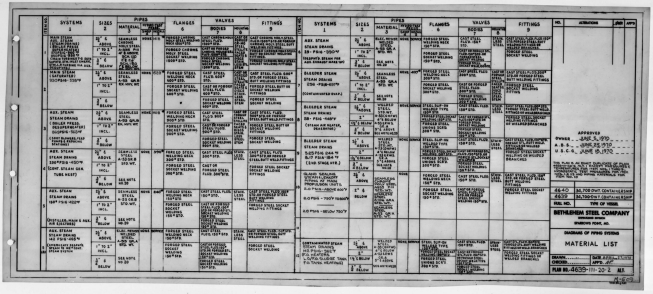
SHIPBUILDING DIVISION

SYMBOL LIST

ORIGINAL	DATE	PLATE NO.
CHECKED	APP'D.	
PLAN NO. 4630-111-20-1		SHT.

APPROVED

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
111-20-1
ALT-
111-50E
8X
F



SYSTEMS 1	SIZES 2	PIPES MATERIAL	PIPES SCHEDULE OR WALL	FLANGES 5	VALVES BODIES	VALVES TRIM	FITTINGS 7
MAIN STEAM STEAM DRAINS (UP TO ISOLATION VALVES) AUXILIARY STEAM (UP TO ISOLATION VALVES)	12" & ABOVE	SEAMLESS CARBON STEEL A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST CHROMIUM STEEL A217 GR. C5 OR FORGED STEEL A182 GR. F5 WITH 12% CHROMIUM MIN.	CAST CARBON STEEL A216 GR. WCB OR FORGED STEEL A105 WITH 12% CHROMIUM MIN.
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A182 GR. F5	FORGED STEEL A182 GR. F5 WITH 12% CHROMIUM MIN.	FORGED STEEL A182 GR. F5 WITH 12% CHROMIUM MIN.
	1½" & BELOW		XXS				
MAIN STEAM CAUTION: 1000°F-1050°F	12" & ABOVE	SEAMLESS STEEL A335 GR. P11	STD. WALL	FORGED STEEL WELDING NECK A182 GR. F11 CL. 2	CAST STEEL A217 GR. WC6	CAST CHROMIUM STEEL A217 GR. C5 OR FORGED STEEL A182 GR. F5 WITH 12% CHROMIUM MIN.	CAST STEEL A216 GR. WCB OR FORGED STEEL A105 WITH 12% CHROMIUM MIN.
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A182 GR. F11 CL. 2	FORGED STEEL A182 GR. F11 CL. 2	FORGED STEEL A182 GR. F5 WITH 12% CHROMIUM MIN.	FORGED STEEL A182 GR. F11 CL. 2
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS (BEYOND ISOLATION VALVES) AUXILIARY STEAM (BEYOND ISOLATION VALVES) CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS CARBON STEEL A106 GR. B OR A53 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS TURB. HEATER	12" & ABOVE	CARBON STEEL A53 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				
EXT. STEAM STEAM DRAINS CONDENSATE FROM STEAM TRAPS	12" & ABOVE	SEAMLESS A106 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	11" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	1½" & BELOW		XXS				

SYSTEMS 1	SIZES 2	PIPES MATERIAL	PIPES SCHEDULE OR WALL	FLANGES 5	VALVES BODIES	VALVES TRIM	FITTINGS 7
AUX. STEAM 150 PSIG - 366°F	½" & ABOVE	SEAMLESS CARBON STEEL A106 GR. B OR A53 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	1" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	¾" & BELOW		XXS				
BLEEDER STEAM STEAM DRAINS 50 PSIG - 298°F CATALOG AIR RELIEF VALVES	½" & ABOVE	SEAMLESS STEEL A106 GR. B OR A53 GR. B	STD. WALL	FORGED STEEL WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	1" TO 2" INCL.		XS	FORGED STEEL SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
	¾" & BELOW		XXS				
BLEEDER STEAM STEAM DRAINS 0-50 PSIG (FOR 70 PSIG SYSTEM) 0-15 PSIG (FOR 15 PSIG SYSTEM)	½" & ABOVE	WELDED STEEL A134 GR. A 3/8" WALL		WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	¾" & BELOW	SEAMLESS STEEL A106 GR. B OR A53 GR. B	XS	SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
BLOWN DOWNS FROM NORMAL AT 70 PSIG 0-70 PSIG - 0.5 GPM 0-70 PSIG - 300 GPM 0-70 PSIG - 700 GPM 0-15 PSIG - 180 GPM	¾" & ABOVE	WELDED STEEL A134 GR. A 3/8" WALL		WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	¾" & BELOW	SEAMLESS STEEL A106 GR. B OR A53 GR. B	XS	SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105
CONDENSATE STEAM 150 PSIG - 366°F 0-70 PSIG - 300°F 0-70 PSIG - 700°F 0-15 PSIG - 180°F CAUTION: HEATING	½" & ABOVE	SEAMLESS STEEL A106 GR. B OR A53 GR. B	STD. WALL	WELDING NECK A105	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB	CAST STEEL A216 GR. WCB OR FORGED STEEL A105
	¾" & BELOW		XS	SOCKET WELDING A105	FORGED STEEL A105	FORGED STEEL A105	FORGED STEEL A105

NO.	ALTERATION	DRN	APP'D

APPROVED
PWRSG - JUNE 5, 1970
A.E.C. - JUNE 25, 1970
U.S.N.R. - JUNE 8, 1970

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REL. NO.	TYPE OF ISSUE
4640	AS-TOD PWT CONTRACT ESMP
4639	AS-TOD PWR CONTRACT ESMP

BETHLEHEM STEEL COMPANY
BETHLEHEM, PENNA.

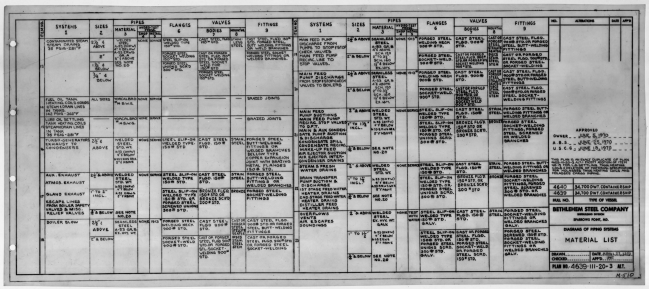
DIAGRAM OF PIPING SYSTEMS

MATERIAL LIST

DRAWN	DATE 4-22-70
CHECKED	APPR.

FILE NO. 4639-111-20-2 REV.

111-20.2
Alt-
111-569
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



SYSTEMS 1	SIZES 2	PIPES MATERIAL 3	FLANGES 4	VALVES BODIES 5	VALVES TRIM 6	FITTINGS 7
CONDENSATE RETURN FROM TURBINE GLAND SEAL EVAPORATOR	1/2 - 1 INCL.	SEAMLESS COPPER TUBE ASTM B-75	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.
	1 1/2 - 2	SEAMLESS COPPER TUBE ASTM B-75	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.
	2 1/2 - 6 INCL.	SEAMLESS COPPER TUBE ASTM B-75	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.
	8" & BELOW	SEAMLESS COPPER TUBE ASTM B-75	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.
FUEL OIL TANK VENT & OVERFLOW LINES	ALL SIZES	SCHED. 80 PIPE ASTM A-53 GR. B	SCREWED, 300 LB.			MALLEABLE IRON, SCREWED, 300 LB.
FUEL OIL TANK VENT & OVERFLOW LINES (ALL OVER 300°F)		SCHED. 80 PIPE ASTM A-53 GR. B	WELDING NECK, 300 LB.			WELDING FITTINGS
LUBE OIL TANK VENT & OVERFLOW LINES (ALL OVER 300°F)		SCHED. 80 PIPE ASTM A-53 GR. B	WELDING NECK, 300 LB.			WELDING FITTINGS
OIL FILL LINE (ALL OVER 300°F)		SCHED. 80 PIPE ASTM A-53 GR. B	WELDING NECK, 300 LB.			WELDING FITTINGS
TURBO-GENERATOR LUBRICATING OIL CONDENSATE	2 1/2 & ABOVE	WELDED STEEL, ASTM A-53, GR. B, STD. WALL, SEAMLESS	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
	2" & BELOW	SEAMLESS STEEL, ASTM A-53, GR. B, STD. WALL	SCREWED, 150 LB.	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, SCREWED, 150 LB.
MAIN EXHAUST	26" & ABOVE	WELDED STEEL, ASTM A-53, GR. B, STD. WALL	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
AUXIL. EXHAUST	26" & ABOVE	WELDED STEEL, ASTM A-53, GR. B, STD. WALL	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
ATMOS. EXHAUST		STEEL, A-53 GR. B, SCH. 80 - 12" & SMALLER, SCH. 40 - 14" & LARGER	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
BLANK EXHAUST	12" TO 24" INCL.	STEEL, A-53 GR. B, SCH. 80 - 12" & SMALLER, SCH. 40 - 14" & LARGER	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
DRAINS - ON MAIN EXHAUST, AUXIL. EXHAUST, VALVES & MISC. VALVES	2" & BELOW	SEE NOTE NO. 28	SCREWED, 150 LB.	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, SCREWED, 150 LB.
BOILER BLOW	2 1/2 & ABOVE	WELDED STEEL, ASTM A-53, GR. B, STD. WALL	WELDING NECK, SLIP-ON	FORGED STEEL, GATE OR FORGED STEEL, GLOBE OR CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
	2" & BELOW	SEAMLESS STEEL, ASTM A-53, GR. B, STD. WALL	SCREWED, 300 LB.	FORGED STEEL, GATE OR FORGED STEEL, GLOBE	STEEL	FORGED STEEL, SCREWED, 300 LB.

SYSTEMS 1	SIZES 2	PIPES MATERIAL 3	FLANGES 4	VALVES BODIES 5	VALVES TRIM 6	FITTINGS 7
MAIN FEED FROM FEED PUMP DISCHARGE VALVE TO ECONOMIZER	26" & ABOVE	WELDED STEEL, ASTM A-53, GR. B, STD. WALL	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
MAIN FEED FROM FEED PUMP DISCHARGE VALVE TO ECONOMIZER	2" & BELOW	SEAMLESS STEEL, ASTM A-53, GR. B, STD. WALL	FORGED STEEL, 900 LB.	FORGED STEEL, GATE OR FORGED STEEL, GLOBE	STEEL	FORGED STEEL, SOCKET-WELDING TYPE
MAIN FEED FROM ECONOMIZER OUTLET VALVE TO BOILERS	24" & ABOVE	WELDED STEEL, ASTM A-53, GR. B, STD. WALL	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
	2" & BELOW	SEAMLESS STEEL, ASTM A-53, GR. B, STD. WALL	FORGED STEEL, 900 LB.	FORGED STEEL, GATE OR FORGED STEEL, GLOBE	STEEL	FORGED STEEL, SOCKET-WELDING TYPE
MAIN FEED FROM BOILER FEED PUMP TO GAS ENGINE DRIVEN GATE, WHICH BYPASS & RECIRCULATING VALVES	12" TO 18" INCL.	WELDED STEEL, ASTM A-53, GR. B, STD. WALL	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
	2" & BELOW	SEE NOTE NO. 29	FORGED STEEL, 900 LB.	FORGED STEEL, GATE OR FORGED STEEL, GLOBE	STEEL	FORGED STEEL, SOCKET-WELDING TYPE
STEAM & FRESH WATER DRAINS	2" & ABOVE	SEAMLESS STEEL, ASTM A-53, GR. B, STD. WALL	WELDING NECK, SLIP-ON	CAST STEEL, GATE, GLOBE	STEEL	FORGED STEEL, BUTT-WELDING TYPE
DRAIN TRANSFER POINT BOTTOM & CONNECTIONS	1" TO 1 1/2 INCL.	SEAMLESS STEEL, ASTM A-53, GR. B, STD. WALL	FORGED STEEL, 900 LB.	FORGED STEEL, GATE OR FORGED STEEL, GLOBE	STEEL	FORGED STEEL, SOCKET-WELDING TYPE
TEST STEAM PRESSURE GAUGE CONNECTIONS & TEST FEED WATER VALVE CONNECTIONS	2" & BELOW	SEE NOTE NO. 29	FORGED STEEL, 900 LB.	FORGED STEEL, GATE OR FORGED STEEL, GLOBE	STEEL	FORGED STEEL, SOCKET-WELDING TYPE
AIR ESCAPES SYSTEMS	2" & BELOW	SEAMLESS COPPER TUBE ASTM B-75	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.
	1" TO 2" INCL.	SEAMLESS COPPER TUBE ASTM B-75	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.
	2 1/2 TO 6 INCL.	SEAMLESS COPPER TUBE ASTM B-75	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.
	8" & BELOW	SEE NOTE NO. 28	SCREWED, BRONZE, 150 LB.	GATE, GLOBE, & CHECK, BRONZE, 150 LB. SCREWED		CAST BRONZE, SCREWED, 150 LB.

NO.	ALTERATIONS	MADE	APP'D

APPROVED
Owner _____ JAN. 6, 1970
A. B. S. _____ JAN. 23, 1970
U. S. C. G. _____ JUNE 25, 1970

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4640 BLTHSTCHT (Contract) SHP
4639 BLTHSTCHT (Contract) SHP

HULL NO. _____ TYPE OF VESSEL

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
QUINCY, MASS.

DIAGRAM OF PIPING SYSTEMS

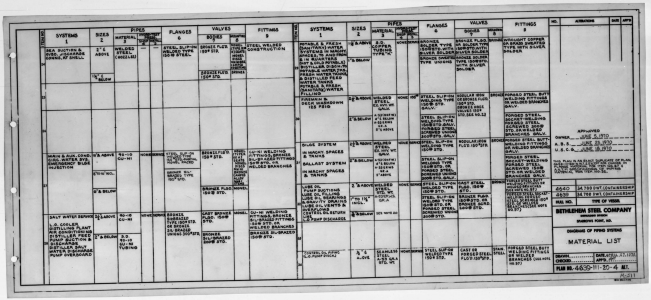
MATERIAL LIST

DRAWN _____ DATE STEEL RELEASED _____
CHECKED _____ APP'D. _____

PLAN NO. 4639-111-20-3 MT.

4-70

F
111-20-3 ALT-
101-510
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



SYSTEMS 1	SIZES 2	PIPES MATERIAL 3	PIPES SCHED. OR THICK. 4	PIPES ENDS 5	FLANGES 6	VALVES SIZES 7	VALVES ENDS 8	FITTINGS 9
MAIN, BOILER & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL	2" & ABOVE 2" & ABOVE 1/2" & BELOW	WELDED STEEL (SEAMLESS)			STEEL, FLAT OR RAISED FACE, 150 LB. STD.	GATE, PLUG, GLOBE, CHECK, SAFETY, & SAFETY RELIEF	BUTT WELD	STEEL, WELDED CONSTRUCTION
MAIN & REHEAT STEAM, AUXILIARY STEAM, & AUXILIARY BLOW INJECTION	2" & ABOVE 1" THRU 1 1/2" 1/2" & BELOW	1/2 CR MOLY		WELDED	STEEL, FLAT OR RAISED FACE, 150 LB. STD. GROUP TWO MATERIALS	2000 LB. FORGED STEEL 150 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
SALT WATER SERVICE L.O. COOLER, CONDENSATE PUMP MOTOR, AIR EJECTOR & INTERCOOLER, MAIN FEED PUMP MOTOR & TURBINE, AUXILIARY BOILER FEED PUMP, OVERBOARD	12 & ABOVE 10" & BELOW	90-10 CU-NI		WELDED	BRONZE, FLAT FACE, 150 LB. STD. CAST IRON BODY, BRONZE TRIM, 125 LB. STD.	CAST IRON BODY, BRONZE TRIM	SCREWED	BRONZE SCREWED FITTINGS

SYSTEMS 1	SIZES 2	PIPES MATERIAL 3	PIPES SCHED. OR THICK. 4	PIPES ENDS 5	FLANGES 6	VALVES SIZES 7	VALVES ENDS 8	FITTINGS 9
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 900 LB. STD.	900 LB. FORGED STEEL	BUTT WELD	STEEL, WELDED CONSTRUCTION
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" THRU 1 1/2" 1/2" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 900 LB. STD. GROUP TWO MATERIALS	2000 LB. FORGED STEEL 900 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 1500 LB. STD.	1500 LB. FORGED STEEL	BUTT WELD	STEEL, WELDED CONSTRUCTION
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" THRU 1 1/2" 1/2" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 1500 LB. STD. GROUP TWO MATERIALS	2000 LB. FORGED STEEL 1500 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 2500 LB. STD. GROUP TWO MATERIALS	2500 LB. FORGED STEEL 2000 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 2500 LB. STD. GROUP TWO MATERIALS	3000 LB. FORGED STEEL 2500 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 3000 LB. STD. GROUP TWO MATERIALS	3000 LB. FORGED STEEL 2500 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 3000 LB. STD. GROUP TWO MATERIALS	4000 LB. FORGED STEEL 3000 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 4000 LB. STD. GROUP TWO MATERIALS	4000 LB. FORGED STEEL 3000 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 4000 LB. STD. GROUP TWO MATERIALS	6000 LB. FORGED STEEL 4000 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 6000 LB. STD. GROUP TWO MATERIALS	6000 LB. FORGED STEEL 4000 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 6000 LB. STD. GROUP TWO MATERIALS	9000 LB. FORGED STEEL 6000 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
MAIN, & REHEAT STEAM, AUXILIARY STEAM, & F.W. SHELL & SUPERHEATER & REHEATER & DESUPERHEATER & F.W. & BOILER & ECONOMIZER & AUXILIARY BOILER & SOOT BLOWING & CONDENSATE PUMP DISCHARGE & MAIN CIRC. PUMP DISCHARGE & AUXILIARY BOILER FEED PUMP DISCHARGE & CONDENSATE RECIRCULATING	2" & ABOVE 1" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, RAISED FACE, 9000 LB. STD. GROUP TWO MATERIALS	9000 LB. FORGED STEEL 6000 LB.	WELD	WELDED STEEL BUTT WELDING FITTINGS FORGED STEEL, SOCKET WELDING FITTINGS FORGED STEEL, SCREWED FITTINGS
CHEMICAL FEED & SAMPLING LINES	1/2" & BELOW	SEAMLESS STEEL SPEC. SA-106 GR. B	XXS	WELDED	STEEL, FLAT OR RAISED FACE, 1500 LB. STD.	CAST OR FORGED STEEL, PLUG VALVES	SCREWED	FORGED STEEL SOCKET WELDING FITTINGS, SCREWED

NO.	REVISIONS	DATE	APP'D

APPROVED

OWNER	JUNE 3, 1970
A. B. S.	JUNE 23, 1970
U. S. C. G.	JUNE 23, 1970

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ADD	DETAIL ENTERED
ADD	DETAIL ENTERED
BILL NO.	TYPE OF VESSEL

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
QUINCY, MASS. U.S.A.

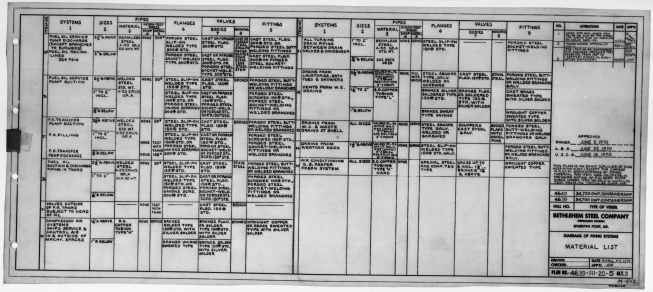
DIVISION OF PIPING SYSTEMS

MATERIAL LIST

DRAWN	DATE APRIL 23, 1970
CHECKED	APPR.

PLAN NO. 46-10-11-10-4 REV.

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
M-611



BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
111-20-5
ALT 3
M-512
F

ITEM NO.	SYSTEMS 1	SIZES 2	PIPES MATERIAL 3	PIPES HYDRO-TEST PRESS. SHOP 4	PIPES HYDRO-TEST PRESS. INSTALL 5	FLANGES 6	VALVES BODIES 7	VALVES MOUNTING 8	FITTINGS 9

ITEM NO.	MATERIALS 1	ASTM. SPECIFICATIONS PIPE 2	VALVES 3	FITTINGS 4	FLANGES 5	REMARKS 6
1	SEAMLESS CHROME MOLY STEEL	A335 GR. P-11				1¼" CR - ½ MO
2	SEAMLESS CARBON MOLY STEEL	A335 GR. P-1				C-½ MO
3	SEAMLESS CARBON STEEL	A-53 TYPE S GR. A				FOR ALL SIZES 650°F (MAX)
4	SEAMLESS CARBON STEEL	A-53 TYPE S GR. B				FOR ALL SIZES 650°F (MAX)
5	SEAMLESS CARBON STEEL	A-106 GR. A				FOR ALL SIZES 800°F (MAX)
6	ELEC. RESIST. WELDED CARBON STEEL	A-53 TYPE E GR. A				FOR ALL SIZES 350°-650°F (MAX)
7	ELEC. RESIST. WELDED CARBON STEEL	A-53 TYPE E GR. B				FOR ALL SIZES 350°-650°F (MAX)
8	FURN. BUTT WELDED CARBON STEEL	A-53 TYPE F (DHFW)	(NOT TO BE USED FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS WITHIN MACHINERY SPACES)			FOR SIZES 4" & BELOW 250°-450°F (MAX)
9	SEAMLESS DRAWN COPPER	B-88				
10	COPPER NICKEL	MIL-T-0016420				90-10
11	CAST CHROME MOLY STEEL		A-217 GR. WC-6			
12	FORGED CHROME MOLY STEEL			A-182 GR. F-11		
13	BUTT WELD CHROME MOLY STEEL			A-234 GR. WP-11		
14						
15						
16	CAST CARBON MOLY STEEL		A-217 GR. WC-1			
17	FORGED CARBON MOLY STEEL			A-182 GR. F-1		
18	BUTT WELD CARBON MOLY STEEL			A-234 GR. WP-1		
19						
20						
21	CAST CARBON STEEL		A-216 GR. WCB			
22	FORGED CARBON STEEL			A-105 GR. I		
23	FORGED CARBON STEEL			A-181 GR. I		
24	BUTT WELD CARBON STEEL			A-234 GR. A		
25						
26						
27	CARBON STL. SLIP-ON				A-36 OPEN HEARTH CARBON 0.30% MAX.	BS-2-UQ STD. APPV'D. BY U.S.C.G. 9/28/54, 10/22/54 & 11/7/69
28						
29	CAST IRON FLG'D.		A-126 GR. B			
30						
31	MALL. IRON - SCR'D.			A-47 GR. A		FOR PRESS. ABOVE 150#
32	MALL. IRON - SCR'D.			A-197 (CUPOLA)		FOR PRESS. BELOW 150#
33						
34	BRONZE		B-61			
35						
36	NODULAR IRON		A-395 (60-45-15			
37						
38						
39						

NO.	ALTERATIONS	DATE	APP'D

APPROVED

OWNER — JUNE 5, 1970

A.B.S. — JUNE 25, 1970

U.S.C.G. — JUNE 18, 1970

THIS PLAN IS AN EXACT DUPLICATE OF PLAN 4622-111-20-6 ALT. 2 EXCEPT FOR CHANGES IN A.S.T.M. DESIGNATIONS FOR ITEM NOS. 3, 4, 6, 7 & 8 AND FOR PIPING MATERIAL AND ADDITION OF SEAMLESS CARBON STEEL UNDER ITEM NO. 5.

HULL NO.	TYPE OF VESSEL
4640	34,700 DWT. CONTAINERSHIP
4639	34,700 DWT. CONTAINERSHIP

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MD.

DIAGRAMS OF PIPING SYSTEMS

MATERIAL LIST

DRAWN. .... DATE APRIL 27, 1970
CHECKED .... APP'D. OF

PLAN NO.- 4639-111-20-6 ALT.

M-513

F
111-20-6 ALT.-
M-513
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

GENERAL NOTES

(APPLICABLE TO ALL DIAGRAMS)

1. ALL PIPES, VALVES AND FITTINGS TO MEET THE REQUIREMENTS OF AMERICAN BUREAU OF SHIPPING AND U.S. COAST GUARD.
2. ALL PIPE SIZES SPECIFIED ARE NOMINAL WITH I.P.S. OUTSIDE DIAMETERS FOR SIZES ABOVE 12" (COPPER I.D., STEEL O.D.)
3. PROVISION FOR EXPANSION IN ALL PIPES TO BE MADE WITHOUT THE USE OF SLIP JOINTS EXCEPT STEAM SUPPLY LINES IN 2ND. DECK PASSAGEWAYS.
4. ALL PIPES TO BE PROPERLY SECURED AGAINST VIBRATIONS.
5. ALL PIPE LINES TO BE DRAINED WHERE NECCESSARY.
6. USE GATE VALVES WHERE INDICATED ON DIAGRAM
7. ALL PIPING SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH TEST PRESSURES SPECIFIED IN COLUMN ON MATERIAL LIST.
8. ALL CONNECTIONS TO MAIN TURBINES AND CONDENSERS TO BE FLANGED.
9. VALVES MARKED "A" TO BE OPERATED LOCALLY AND FROM DECK.
10. VALVES MARKED "B" TO BE FITTED WITH EXTENSION STEMS FOR OPERATION FROM DECK.
11. VALVES MARKED "C" TO BE ARRANGED FOR CONVENIENT OPERATION FROM TURBINE OPERATING PLATFORM.
12. VALVES MARKED "D" TO BE ARRANGED FOR CONVENIENT OPERATION FROM BOILER FIRING SPACE.
13. VALVES MARKED "E" TO BE OPERABLE FROM DECK OUTSIDE OF MACHINERY SPACE CASING.
14. VALVES MARKED "F" TO BE ARRANGED FOR CONVENIENT OPERATION FROM DISTILLING PLANT STATION.
15. FLOAT CONTROLLED VALVES TO BE PROVIDED WITH EXTERNAL MEANS FOR LOCKING OPEN IN CASE OF DERANGEMENT.
16. ALL VALVES AND DECK PLATES TO HAVE NAME PLATES.
17. FLANGED JOINTS ARE TO BE FITTED AS REQUIRED FOR INSTALLATION AND OVERHAUL PURPOSES ONLY.
18. WHERE GALVANIZED PIPE IS REQUIRED, ALL STRAIGHT PIPE USED IN CONJUNCTION WITH DRESSER TYPE COUPLINGS OR WELDING COUPLINGS OR SLEEVES; GALVANIZED PIPE SHALL BE ORDERED. "GALWELD" WILL BE APPLIED, AFTER WELDING, AT THE COUPLINGS OR SLEEVES. ALL BENT PIPE AND PIPING WHERE NOZZLES, FITTINGS OR FLANGES MUST BE AFFIXED; BLACK PIPE SHALL BE ORDERED AND COMPLETE FABRICATED ASSEMBLY SHALL THEN BE GALVANIZED. ALL FITTINGS AND FLANGES USED IN CONJUNCTION WITH THESE FABRICATIONS SHALL ALSO BE ORDERED "BLACK".
19. NO ACID BESSEMER STEEL TO BE USED FOR ANY PIPING SYSTEMS.
20. WHERE STEEL WELDING FLANGES OR FITTINGS ARE USED IN SIZES 3/4" AND BELOW, PIPING SHALL BE OF EXTRA HEAVY WEIGHT IN LIEU OF STANDARD WEIGHT SPECIFIED TO CONFORM WITH U.S. COAST GUARD REGULATIONS.
21. NO SCREWED OR FLANGED JOINT PIPING WILL BE PERMITTED TO RUN THRU LOCKERS.
22. FOR CLASS II PIPING, ALL WELDED STEEL PIPE 4" AND BELOW TO BE FURNACE BUTT-WELDED PIPE, 5" AND ABOVE TO BE ELECTRIC RESISTANCE WELDED PIPE (FOR RESTRICTIONS IN USE-SEE 4639-111-20-6 ITEM. NO.8)
23. ALL HOSE VALVES TO HAVE HOSE THREADS IN ACCORDANCE WITH NOTE NO. 24. CAP AND CHAIN TO BE PROVIDED AT ALL VALVES WHERE HOSE IS NOT CONNECTED AT ALL TIMES.
24. HOSE THREADS TO BE AS FOLLOWS:

ITEM	SERVICE	SIZE	O.D. MALE	THREADS PER INCH	THREAD STD.
(a)	FIREMAIN	1½"	1.9900"	9	NATL. STD. FIRE HOSE
(b)	FIREMAIN	2½"	3.0686"	7½	NATL. STD. FIRE HOSE
(c)	POTABLE WATER	2½"	2.8434"	8	I.P.S. HOSE
(d)	MISC. WATER SERV.	½"	0.8248"	14	NATL. STD. HOSE
(e)	MISC. WATER SERV.	¾"	1.0553"	14	NATL. STD. HOSE
(f)	MISC. WATER SERV.	1"	1.2951"	11½	NATL. STD. HOSE
(g)	MISC. WATER SERV.	1¼"	1.5788"	11½	NATL. STD. HOSE
(h)	MISC. WATER SERV.	2"	2.3528"	11½	NATL. STD. HOSE
(i)	MISC. WATER SERV. & SHORE STEAM	2½"	3.0686"	7½	NATL. STD. HOSE

25. ALL PIPING WHERE SOCKET WELDING VALVES ARE SPECIFIED, SIZES 1" TO 2" TO HAVE SOCKET WELDING FLANGED COUPLINGS AND SIZES 3/4" & BELOW TO HAVE SOCKET WELDING UNIONS COUPLINGS INSTALLED CLOSE TO VALVE ENDS FOR INSTALLATION AND OVERHAUL PURPOSES.

MAIN & AUXILIARY STEAM

26. THE STOP CHECK VALVES IN MAIN & AUXILIARY STEAM LINES FROM BOILER TO BE NON-CHATTERING TYPE.
27. AHEAD AND ASTERN THROTTLE VALVES OVERSPEED GOVERNOR AND STRAINERS ARE FURNISHED WITH MAIN TURBINES.
28. THROTTLE VALVES FOR TURBO-GENERATORS ARE FURNISHED WITH UNITS.
29. THE STOP VALVES AT THE MAIN TURBO-GENERATOR TO BE GROUPED TOGETHER.
30. WHERE WELDING ELBOWS ARE USED, THEY ARE TO BE OF THE LONG RADUIS TYPE IF POSSIBLE.
31. BOILER SAFETY VALVES TO BE FURNISHED WITH BOILERS.
32. RECEIVER PIPES TO BE ARRANGED FOR EMERGENCY INDEPENDENT OPERATION OF EITHER H.P. OR L.P. TURBINE.
33. STEAM STRAINERS SHALL BE FITTED AHEAD OF REDUCING VALVES EXCEPT WHERE INCORPORATED WITHIN REDUCING VALVE BODIES.
34. BLOW-OFF VALVES ON SEA CHESTS TO BE FITTED WITH HOSE CONNECTIONS. STEAM OR COMPRESSED AIR TO BE USED FOR BLOWING OUT SEA CHESTS VIA PORTABLE HOSE.
35. STRAINERS TO BE FITTED WITH BLOW-OFF VALVES WITH DRAINS DISCHARGING TO BILGE.
36. VALVES MARKED "G" TO BE OF THE THERMOSTATICALLY OPERATED REDUCING TYPE.
37. VALVES MARKED "H" TO BE OPERABLE LOCALLY AND FROM BOILER FIRING AREA.

AUXILIARY EXHAUST & BLEEDER STEAM

41. PROVIDE VALVED DRAIN CONNECTIONS AT OUTLET OF TURBINE BLEEDER NON-RETURN VALVES.
42. PUMP TURBINE EXHAUST VALVES SHALL BE OF THE SPRING LOADED LIFT CHECK TYPE.
43. AUXILIARY EXHAUST ATMOSPHERIC RELIEF VALVE TO BE OF THE NON-ADJUSTABLE SPRING LOADED DASH POT TYPE WITH A SET PRESSURE OF 45#G AND FITTED WITH A HOLD OPEN AND POSITION INDICATOR.
44. STRAINERS TO BE FITTED WITH BLOW-OFF VALVES WITH DRAINS DISCHARGE TO BILGE.
45. STOP CHECK VALVES IN TURBINE BLEEDER AND DEAERATING FEED HEATER CONNECTIONS TO BE OF THE NON-CHATTERING TYPE.

AIR EJECTOR, CONDENSATE & FEED SYSTEM

48. THE STEAM GENERATOR FOR THE BOILER FEED REGULATING VALVE WILL BE LOCATED AT THE BOILER STEAM DRUM IN ACCORDANCE WITH INSTRUCTIONS FURNISHED BY VENDOR SO THAT BOILERS WILL MAINTAIN THE SAME WATER LEVEL.
49. BOILER FEED REGULATORS TO BE ARRANGED TO OPEN IN CASE OF COMPRESSED AIR FAILURE.
50. BLOW DOWN PIPING FOR BOILER FEED REGULATOR STEAM GENERATOR NOT TO BE FITTED PERMANENTLY UNTIL THE LOCATION OF THE STEAM GENERATOR HAS BEEN CHECKED WITH BOILER IN OPERATION.
51. EACH HIGH POINT IN FEED DISCHARGE SYSTEM WILL BE FITTED WITH A ½" VENT VALVE DISCHARGING TO ATMOSPHERE.
52. THE STOP CHECK VALVES IN THE MAIN & AUXILIARY FEED LINES LOCATED AT THE PUMP DISCHARGE TO BE OF THE PISTON NON-SHOCK TYPE.
53. WHERE PRACTICABLE, CONDENSATE PUMP SUCTION CASINGS AND SUCTION PIPING WILL BE ARRANGED SO AS TO BE SELF VENTING; OTHERWISE VENT CONNECTIONS WILL BE PROVIDED TO THE RESPECTIVE CONDENSER SHELLS WITHOUT HORIZONTAL LEADS OR POCKETS.

TURBINE DRAINS, GLAND SEAL & GLAND LEAK-OFF

56. PRESSURES INDICATED ON TURBINE DRAIN DIAGRAM ARE FOR FULL POWER AHEAD.
57. PIPING FROM GLANDS TO GLAND EXHAUSTER CONDENSER TO BE SELF DRAINING. WHERE POCKETS ARE NECESSARY DRAIN THRU WATER SEALS 15" DEEP TO ATMOSPHERIC DRAIN COLLECTING SYSTEM.
58. PROVIDE ½" DRAIN PIPE WITH VALVE AND THERMOSTATIC TRAP AT EACH LOW POINT OF GLAND SEALING SYSTEM DISCHARGING TO ATMOSPHERIC DRAIN COLLECTING SYSTEM.
59. GLAND SEALING GAUGE TO BE OF THE PRESSURE RETARD TYPE WITH DIAL GRADUATED 0# TO 15# AND TO BE LOCATED ON CENTRAL CONTROL STATION.

SALT WATER

62. ALL SENTINEL VALVES FOR SALT WATER PIPING SYSTEMS SHALL DISCHARGE TO PUMP SUCTION.
63. ALL HOSE VALVES IN MACHINERY SPACES TO BE BRONZE. SEE NOTES NO. 23 AND 24.
64. SEA CHESTS AND OVERBOARD DISCHARGES TO BE WELDED STEEL CONSTRUCTION, INJECTION CHESTS TO BE FITTED WITH GALVANIZED STEEL STRAINER PLATES HAVING A CLEAR AREA THRU OPENINGS OF AT LEAST TWO TIMES PIPE AREA.

BILGE PIPING

67. STRAINERS FITTED AT THE END OF BILGE PIPES TO HAVE OPEN AREA OF NOT LESS THAN THREE TIMES THE AREA OF SUCTION PIPE.

FUEL OIL

70. ALL FUEL OIL PIPING TO BE INSTALLED IN A LOCATION AS REMOTE FROM SUPERHEATED OR HIGH PRESSURE STEAM PIPING AS POSSIBLE.
71. FUEL OIL SERVICE DISCHARGE PIPING BETWEEN PUMPS AND BOILER BURNER MANIFOLDS TO BE LED SO AS TO BE ALWAYS VISIBLE TO OPERATING PERSONNEL.
72. FUEL OIL STRAINERS IN MACHINERY SPACE TO BE FITTED WITH DRIP PANS.
73. MOTOR DRIVEN FUEL OIL SERVICE PUMPS TO BE EQUIPPED WITH A MASTER SWITCH LOCATED OUTSIDE OF MACHINERY SPACES FOR EMERGENCY SHUT DOWN.
74. ALL FUEL OIL LOW SUCTIONS ARE TO BE LOCATED AS NEAR AFT END OF TANKS AS PRACTICABLE (AT LOW POINT OF TANK WHEN IN BALLAST CONDITION) AND TO TERMINATE WITHIN 1" OF BOTTOM OF TANKS.
75. HIGH SUCTION PIPING TO BE 18" ABOVE TANK BOTTOMS AND TO BE LOCATED NEAR CONCENTRATION OF GRID HEATING SURFACE.
76. ALL SCREWED JOINTS TO BE SEAL WELDED.

NO.	ALTERATIONS	DATE	APP'D
1	ADDED NOTE NO. 76 & MODIFIED NOTE NO. 22 PER OWNERS LTR. 6/5/70. MODIFIED NOTE NO. 18.	[illegible]	[illegible]
2	ADDED OWNERS APPROVAL OF ALT. 1.	4/8/71	GPS [illegible]

APPROVED
OWNER - JUNE 5, 1970
A.B.S. - JUNE 25, 1970
U.S.C.G. - JUNE 18, 1970

THIS PLAN IS AN EXACT DUPLICATE OF PLAN 4622-111-20-7 ALT. 1.

HULL NO.	TYPE OF VESSEL
4640	34,700 DWT. CONTAINERSHIP
4639	34,700 DWT. CONTAINERSHIP

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MD.

DIAGRAMS OF PIPING SYSTEMS

GENERAL NOTES

DRAWN. .... DATE APRIL 27, 1970
CHECKED. .... APP'D. [illegible]

PLAN NO. 4639-111-20-7 ALT. 2

M-514

F
111-20-7 Alt. 2
M-514
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

STEAM AND FRESH WATER DRAINS

80. EXCEPT BLOWER STEAM PIPING, TO BE ARRANGED WITH A SLIGHT PITCH TOWARD THE DRAIN POINTS AT THE LOWER VALVES, WHICH ARE TO BE APPROVED BY THE INSPECTOR.

81. ALL LOW POINTS IN BILGE VALVE ESCAPE PIPING TO BE PROVIDED WITH 1/4" BRONZE DRAIN-PLUGS.

82. LOCATE OPEN FUNNELS AS NEAR TO DRAIN VALVES AS POSSIBLE.

83. ON INSPECTION TANK DRAINS TO BE LED TO BILGE, WITH SEPARATE VALVES AND PROPERLY FLANGED AT THE INSPECTION TANK.

84. STEAMERS TO BE FITTED WITH BLOW-OFF VALVES AT THE LOWEST POINT OF THE BOILER.

85. ALL INSPECTING TUBES TO BE FITTED WITH QUICK-DRAINED THE MAIN CONDENSATION IN THE DRAINS.

86. ALL INSPECTING TUBES TO BE FITTED WITH GLASS FOR OBSERVATION OF INTERIOR OF THE TUBES.

87. PILOT VALVES SHALL BE SET TO A HEIGHT SO THAT THE CONDENSATION WILL BE BELOW THE WATER LEVEL TO BE MAINTAINED.

LUBRICATING OIL

90. ALL LUBRICATING OIL PIPING TO BE FLEXIBLE AND TUBES SHALL BE ANNEALED BEFORE BENDING.

91. OVER ONE OF THE MAIN CYLINDER LUBRICATING OIL PIPES, A SIGHT FEED LUBRICATOR SHALL BE FITTED FOR THE USE AT LEAST 4 GRADES LOWER THAN IS USED IN THE CYLINDERS.

92. THE ENTIRE LUBRICATING OIL SYSTEM TO BE STRAIGHTENED OF RESIDUAL AND THE WATER AND OIL PIPES TO BE TESTED TO 100 LBS. PRESSURE AND THEN BLOWN OUT.

93. ALL CONNECTIONS TO LEAD OIL PIPES TO BE FLANGED.

94. ALL VALVES ON PIPING TO BE OF THE SLUICE VALVE OR PLUG TYPE, EXCEPTING RELIEF AND SAFETY VALVES.

95. ALL OPENINGS TO LEAD OIL PIPES FROM TANKS TO BE FITTED WITH SUITABLE STRAINERS.

96. LEAD OIL PIPING TO BE LAID AS DIRECTLY FROM TANKS TO ENGINES AS POSSIBLE AND WITH AS FEW BENDS AS POSSIBLE.

97. VALVES BRAND AND NOT GUARANTEED BY LEAD OIL PIPING TO BE OF THE SLUICE VALVE OR PLUG TYPE, EXCEPTING RELIEF AND SAFETY VALVES.

98. ALL SCREWED JOINTS TO BE SEAL WELDED.

BOILER BLOWS AND ESCAPES

100. THE BLOWS OR WATER WILL LOCOMOTIVE BOILER BE LEAD TO A SUITABLE TANK OR TO THE SEA AS DIRECTED BY THE INSPECTOR. THE BLOWS OR WATER SHALL BE FITTED WITH BRONZE PIPING FITTED OR AS LEAD PIPE WHERE

DISTILLING PLANT

105. DISTILLING PLANT TO BE OF SUFFICIENT CAPACITY TO MAKE GOOD ANY LOSS OF FEED WATER DUE TO LEAKAGE OR OTHER CAUSES, AND SHALL BE CAPABLE OF SUPPLYING 1/2 GALLON PER HOUR PER NOMINAL HORSE POWER OF THE MAIN ENGINES.

106. BOILERS SHALL BE SUPPLIED WITH FEED WATER FROM THE DISTILLING PLANT ONLY.

107. A SUITABLE SEPARATOR SHALL BE FITTED IN THE STEAM PIPE LEADING FROM THE BOILER TO THE DISTILLING APPARATUS.

108. THE DISTILLING PLANT SHALL BE SUPPLIED WITH SUITABLE FEED PUMPS AND PIPING.

FULL OIL TANK HEATING

110. ALL DECKS OF THE FUEL OIL TANK HEATING SYSTEM SHALL BE TESTED TO A HYDROSTATIC HEAD CORRESPONDING WITH BOILER TESTING BY JOINTS.

111. A CONNECTION TO AN OPEN HEATING SURFACE IS TO BE PROVIDED IN THE VICINITY OF THE FUEL OIL SUCTION PIPES.

AIR ESCAPES AND OVERFLOWS

115. VALVES OR SCREWED CAPS SHALL BE FITTED TO ALL AIR ESCAPES AND OVERFLOWS.

116. ALL AIR ESCAPES SHALL BE ARRANGED TO DISCHARGE ABOVE THE LOAD WATER LINE WHERE THEY CANNOT BE CLOSED BY THE SEA.

117. AIR PIPES SHALL NOT PASS BUNKERS, BUT SHALL BE CARRIED UP.

118. ALL PIPES AND FITTINGS FOR FUELLING WATER OR FUEL SHALL BE OF SUCH SIZE AS TO ENABLE THE TANKS TO BE SAFELY FILLED FROM THE SHIP IN THE SHORTEST TIME.

125. OPENINGS TO BE MADE FOR CLOSING ALL WEAT EXPOSURE TO BE MADE.

FIRE AND DECK WASH SYSTEM

130. ALL HOSE VALVES OUTSIDE OF ENGINEERS' SPACES TO BE BRONZE. HOSE VALVES TO BE OF 1" BORE.

135. SPECIAL CLOSETS TO BE PROVIDED FOR CONVENIENT ACCESS TO ALL PARTS OF THE SHIP.

137. TO BE IN ACCORDANCE WITH INTERNATIONAL SHORE CONNECTIONS CHART.

SOUNDING TUBES

138. SOUNDING TUBES TO EXTEND AS FAR AROUND THE SHIP AS POSSIBLE AND TO BE LEAD TO UPPER DECK.

139. SUITABLE PLATES TO BE PROVIDED AT BOTTOM OF SOUNDING TUBES TO PREVENT WELL PUNCHING.

140. DOUBLE BOTTOMED TUBES TERMINATED ON UPPER DECK WITH SUITABLE SCREWED CAPS AND CHAINS. WHERE SOUNDING TUBES PASS THROUGH OIL TANKS THEY SHALL BE FITTED WITH SUITABLE OIL TIGHT GLANDS AND SHALL HAVE SCREWED CAPS.

HEATING SYSTEM

150. EXPANSION BENDS TO BE MADE FOR EXPANSION WITH SUITABLE SUPPORTS.

160. ALL BRANCHES TO BE LEVEL WITH STEAM VALVES IN BASE AND PROVIDED WITH DRAIN COCKS.

COMPRESSED AIR

165. COMPRESSORS AND HOSES TO BE FITTED WITH A SUITABLE SAFETY VALVE.

167. GREASE PROOF PAD PROVIDED FOR ALL BRONZE LAGGED PIPES AS REQUIRED AND FOR ALL PIPES OF SPECIAL ALLOY.

168. PNEUMATIC HOSE CONNECTIONS TO BE FOR 3/4" HOSE.

POTABLE WATER

185. COLD WATER FAUCETS WILL BE OF RIGHT ANGLE.

188. ALL HOSE VALVES TO BE BRONZE. SEE NOTES NO.52 & 54.

187. SUITABLE VENTILATION TO BE PROVIDED FOR COMPLETE DRAINAGE AND AIR CIRCULATION

188. HOT WATER LINE RETURN TO TANKS TO BE LEAD-LINED BETWEEN TANK HEATER AND TANK.

189. EXPANSION CONNECTIONS IN HYDROPNEUMATIC TANKS SHALL BE OF SUITABLE TYPE.

DIESEL OIL

195. SUCTION FROM FUELS OIL TANKS TO BE FITTED WITH SUITABLE STRAINERS AND SHUT-OFF VALVES.

196. ALL SCREWED JOINTS TO BE SEAL WELDED.

NO.	ALTERATION	DATE	APP'D
1	ADDED NOTE 54 TO NOTE 188	4-8-70	
2	ADDED NOTE 55 TO NOTE 188	4-8-70	
3	NOTE 55 DELETED	4-8-70	

APPROVED

CHASE ..... JUNE 3, 1970

A. S. S. ..... JUNE 10, 1970

A. B. S. ..... JUNE 18, 1970

Work Not to be Started Because of Approval of Plans and Notes

4640	46,700 SHIP DEADWEIGHT
4639	34,700 SHIP LIGHTSHIP
HULL NO.	TYPE OF VESSEL

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
QUINCY, MASS.

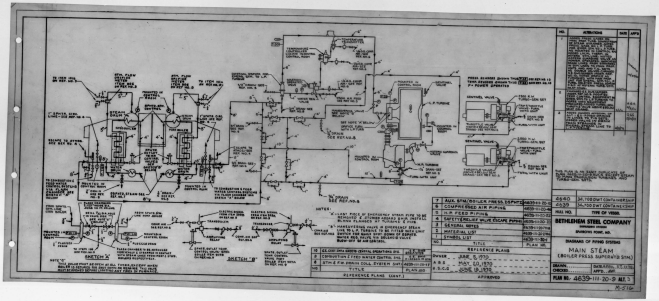
DIVISION OF YOUNG STOVING

GENERAL NOTES

DESIGN ..... DATE APR 24 1970
CHECKED ..... APP'D .....

PLAN NO. 4639-111-20-5 REV. 7

111-30-F
111-61A
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



BETHLEHEM STEL CORP. JULY 1974
H 4639-4640
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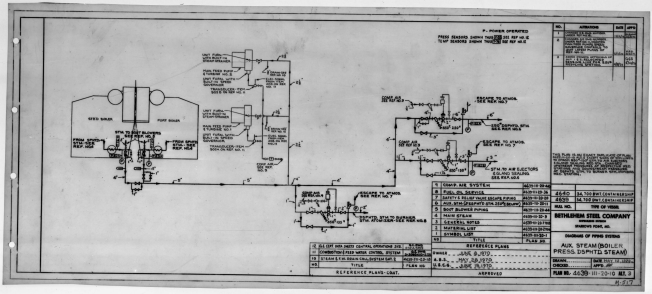
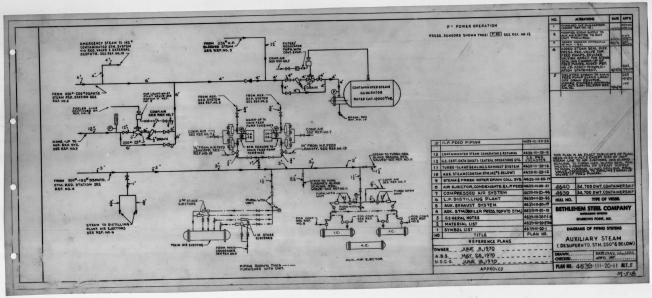
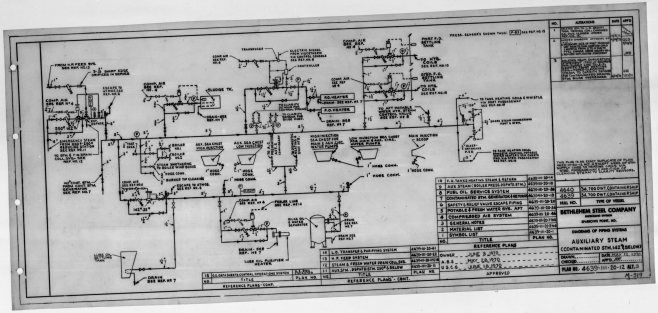

P - POWER OPERATED
BETHLEHEM STEEL CORP.
AUX. STEAM BOILER
PRESS. (SPHTD STEAM)
DIAGRAM OF PIPING SYSTEM
H 4639-4640
8X
M-517


AUXILIARY STEAM
BETHLEHEM STEEL COMPANY
BETHLEHEM, PENNA.
DRAWING NUMBER
H 4639-4640
8X



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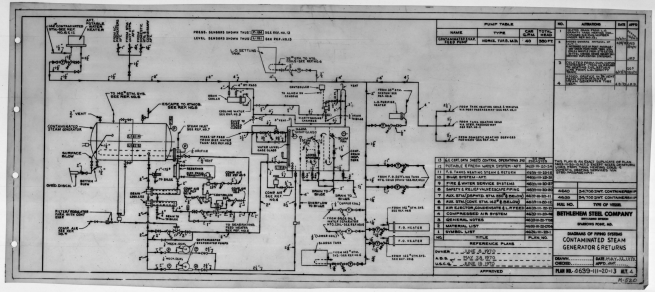
111-2012
Alt. 3
M-519
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



PUMP TABLE

NAME	TYPE	CAP. G.P.M.	TOTAL HEAD
CONDENSATE/FEED TEST PUMP	HORIZ. TURB. MTD.	40	1800 FT.

NO.	DESCRIPTION	DATE	APPD.
1	ADDED "STEAM TO TURBINE GLAND SEALING" AND "STEAM TO GLAND SEALING"		
2	ADDED "STEAM TO TURBINE GLAND SEALING" AND "STEAM TO GLAND SEALING"		
3	ADDED "STEAM TO TURBINE GLAND SEALING" AND "STEAM TO GLAND SEALING"		
4	ADDED "STEAM TO TURBINE GLAND SEALING" AND "STEAM TO GLAND SEALING"		

1	24" CONT. EPD. VALVE CONTROL OPERATING SYS.	
2	11" & 14" MAIN STEAM VALVES & ACTUATORS	
3	RPHE SYSTEM	
4	FIRE & WATER SERVICE SYSTEMS	
5	SAFETY & RELIEF VALVE DISCHARGE PIPING	
6	AUX. STEAM SUPPLY SYS. (NOT SHOWN)	
7	AUX. STEAM CONT. SYS. (NOT SHOWN)	
8	CONDENSATE SYSTEM	
9	COMPRESSED AIR SYSTEM	
10	GEN. NOTES	
11	MATERIAL LIST	
12	DRAWING LIST	

TITLE	PLAN NO.
REFERENCE PLANE	
POWER	
A.S.M.E.	
A.S.A.	

APPROVED

ASME	SECTION VIII CONTAINMENT VESSEL
ASME	SECTION VIII UNFIRED CONTAINMENT
PIPE NO.	TYPE OF WELD

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
SHERMAN MILLS, N.Y.

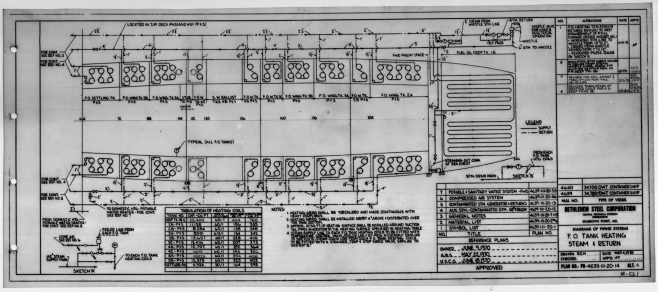
DIAGRAM OF PIPING SYSTEMS
CONTAINMENT STEAM
GENERATOR ERETURNS

DRAWN	DATE
CHECKED	APP'D

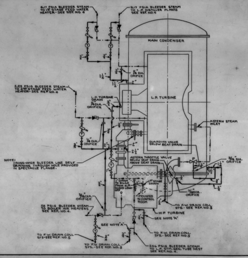
PLAN NO. 6539-111-20-13 SHT. 4

111-20-13
SHT 4
111-526

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



BETHLEHEM STEEL CORP. JULY 1974
H 4633-4640
8X



NOTE "A"
DRAIN VALVES TO BE OPERABLE FROM TURBINE OPERATING LEVEL WITH HANDWHEELS LOCATED ADJACENT TO RESPECTIVE BLEEDER VALVES.
P-POWER OPERATED

NO.	ALTERATIONS	DATE	APP'D
1	DELETED PRESS. SENSOR P-7-D AT H.P. TURBINE 1st STAGE DRAIN CONN.	10/20/70	OCEANIC 11/20/70
2	ADDED OWNERS APPROVAL OF ALT. 1. TRAP IN LIEU OF ORIFICE FURNISHED FOR 1ST STAGE DRAINS.	4/8/71	GGS 5/10/71
3	ADDED ORIFICE SIZES.	6/17/71	GGS 7/13/71
4	DELETED ABOVE SEAT DRAIN ON GUARDIAN VALVE. ADDED APPROVAL DATES FOR ALTS. 2 & 3. DESIGNATED GUARDIAN VALVE AS POWER OPERATED.	10/6/71	J.R.P. GGS 11/8/71
5	ADDED H.P. GLAND LEAKOFF DRAIN	2/9/72	N.A. J.R.P.
6	INDICATED H.P. GLAND LEAK-OFF PIPE DRAIN TO BILGE.	3/13/72	GGS J.R.P.

NO.	TITLE	PLAN NO.
5	STM. & F.W. DRAIN COLL. SYSTEM-SH. 1 & 2	4639-111-20-17&18
4	AUX. EXHAUST & BLEEDER STEAM	4639-111-20-19
3	GENERAL NOTES	4639-111-20-7 TO 8
2	MATERIAL LIST	4639-111-20-2 TO 6
1	SYMBOL LIST	4639-111-20-1

REFERENCE PLANS

OWNER ___ JULY 29, 1970
A.B.S. ___ AUGUST 3, 1970
U.S.C.G. ___ JULY 29, 1970
APPROVED

HULL NO.	TYPE OF VESSEL
4640	34,700 DWT CONTAINERSHIP
4639	34,700 DWT. CONTAINERSHIP

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MD.

DIAGRAMS OF PIPING SYSTEMS

TURBINE DRAINS

DRAWN.......... DATE. JULY 13, 1970
CHECKED.......... APP'D. AF

PLAN NO.- 4639-111-20-15 ALT. 6

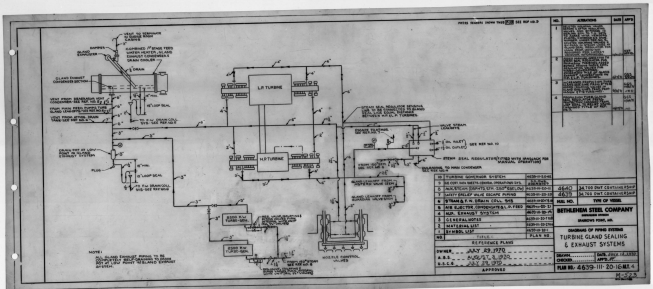
M-522

F

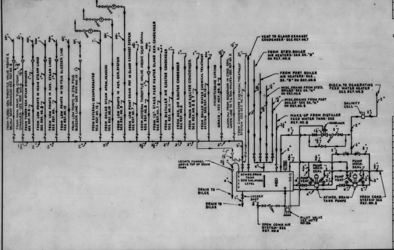
111-20-15
ALT. 6

M-522

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X
111-30-16
A17.4
01-523



PUMP TABLE			
NAME	TYPE	CAP. G.P.M.	TOTAL HEAD
ATMOS. DRAIN TK. PUMPS	VERT SINGLE STAGE CENT.	50	200 FT.

LEVEL SENSORS SHOWN THUS [L-158] SEE REF NO. 14

NO.	ALTERATIONS	DATE	APP'D
1	CHANGED G.E. DWG NUMBER UNDER REF. NO. 14. ADDED OVERFLOW LINE FROM RESERVOIR IN COND. LINE TO T.G. EXH. VALVES. ADDED DRAINS FROM T.G. THROTTLE VALVES ABOVE & BELOW SEAT DRAINS.	1/18/71	2/1/71
2	PER OWNERS LTR. 2/1/71 ADDED SWING CHECK VALVE IN OVERFLOW LINE FROM RESERVOIR IN COND. SEAL WATER LINE TO T.G. EXH. VALVES INADVERTENTLY OMITTED UNDER ALT. 1.	3/11/71	GGS 4/6/71
3	ADDED OWNERS APPROVAL OF ALT. 1.	4/8/71	GGS 5/11/71
4	ADDED UPPER CONN. FOR ATMOS. DRAIN TANK LEVEL CONTROLLER PILOT. DELETED DRAIN FROM MAIN FEED PUMP GLAND LEAKOFF EDUCTOR.	3/17/72	GGS 4/12/72 J.R.D
5	ADDED CONDENSATE CHEMICAL TREATMENT SYS. SUPPLY TO ATMOS. DRAIN TANK.	7/10/72	GGS 8/3/72 J.R.D
6	MAIN AIR EJECTOR DRAIN CHANGED TO ENTER ATMOS. DRAIN TANK DIRECT VIA FUNNEL IN LIEU OF VIA CHECK VALVE AND DRAIN MAIN.	4/9/73	J.R.D.

THIS PLAN IS AN EXACT DUPLICATE OF PLAN 4622-111-20-17 ALT. 4 EXCEPT ADDITION OF DRAINS FROM MAIN PROP. TURBINE STM. STRAINER & FROM LOW POINTS IN 256 PSIG BLEEDER LINE, DELETION OF DRAIN FROM MAIN STM. MANEUVERING VALVE & ADDITION OF DRAIN FROM ASTERN THROTTLE VALVE ABOVE SEAT.

NO.	TITLE	PLAN NO.
15	TURBINE DRAINS	4639-111-20-15
14	G.E. CERT. DATA SHEETS CENTRAL OPERATIONS SYS.	G.E. DWG. 232A3739
13	BOILER WATER & CONDENSATE TEST & CHEMICAL TREATMENT SYSTEMS	4639-111-20-45
12	AUX. STEAM (CONTAMINATED STM. 142# & BELOW	4639-111-20-12
11	LOW PRESS. DISTILLING PLANT PIPING	4639-111-20-55
10	FUEL OIL SERVICE SYSTEM	4639-111-20-36
9	AUX. EXHAUST & BLEEDER STEAM	4639-111-20-19
8	MAIN STEAM PIPING	4639-111-20-9
7	TURBINE GLAND SEALING & EXH. SYSTEM	4639-111-20-16
6	STEAM & F.W. DRAIN COLL. SYSTEM (SH. 2)	4639-111-20-18
5	AIR EJECTOR CONDENSATE & L.P. FEED PIPING	4639-111-20-21
4	COMPRESSED AIR SYSTEM	4639-111-20-46
3	GENERAL NOTES	4639-111-20-7108
2	MATERIAL LIST	4639-111-20-2106
1	SYMBOL LIST	4639-111-20-1

REFERENCE PLANS

OWNER JULY 6, 1970
A.B.S. JUNE 26, 1970
U.S.C.G. JULY 7, 1970

APPROVED

HULL NO.	TYPE OF VESSEL
4640	34,700 DWT. CONTAINERSHIP
4639	34,700 DWT. CONTAINERSHIP

BETHLEHEM STEEL COMPANY
SHIPBUILDING DIVISION
SPARROWS POINT, MD.

DIAGRAMS OF PIPING SYSTEMS
STEAM & FRESH WATER DRAIN COLL. SYSTEM
(SHEET 1)

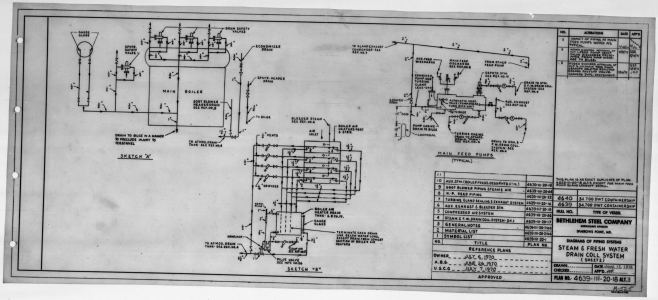
DRAWN. CHECKED. DATE JUNE 12, 1970 APP'D

PLAN NO. 4639-111-20-17 ALT. 6

M-524

111-20-17 ALT. 6
M-524

F
BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X

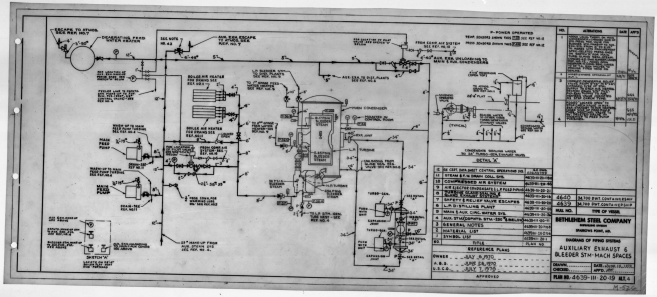


F

111-20-18
ALT.3

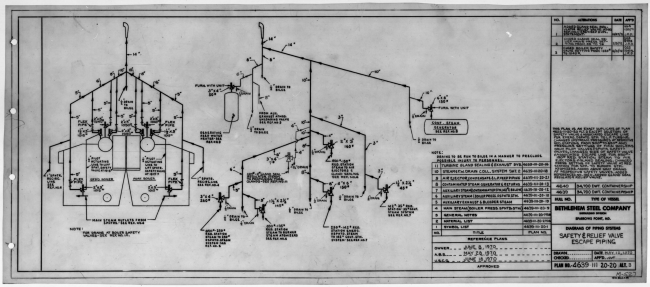
111-525

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



111-20-19
ALT. 4
111-526

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X



111-20-20
ALT. 3
M-627

BETHLEHEM STEEL CORP. JULY 1974
H 4639-4640
8X